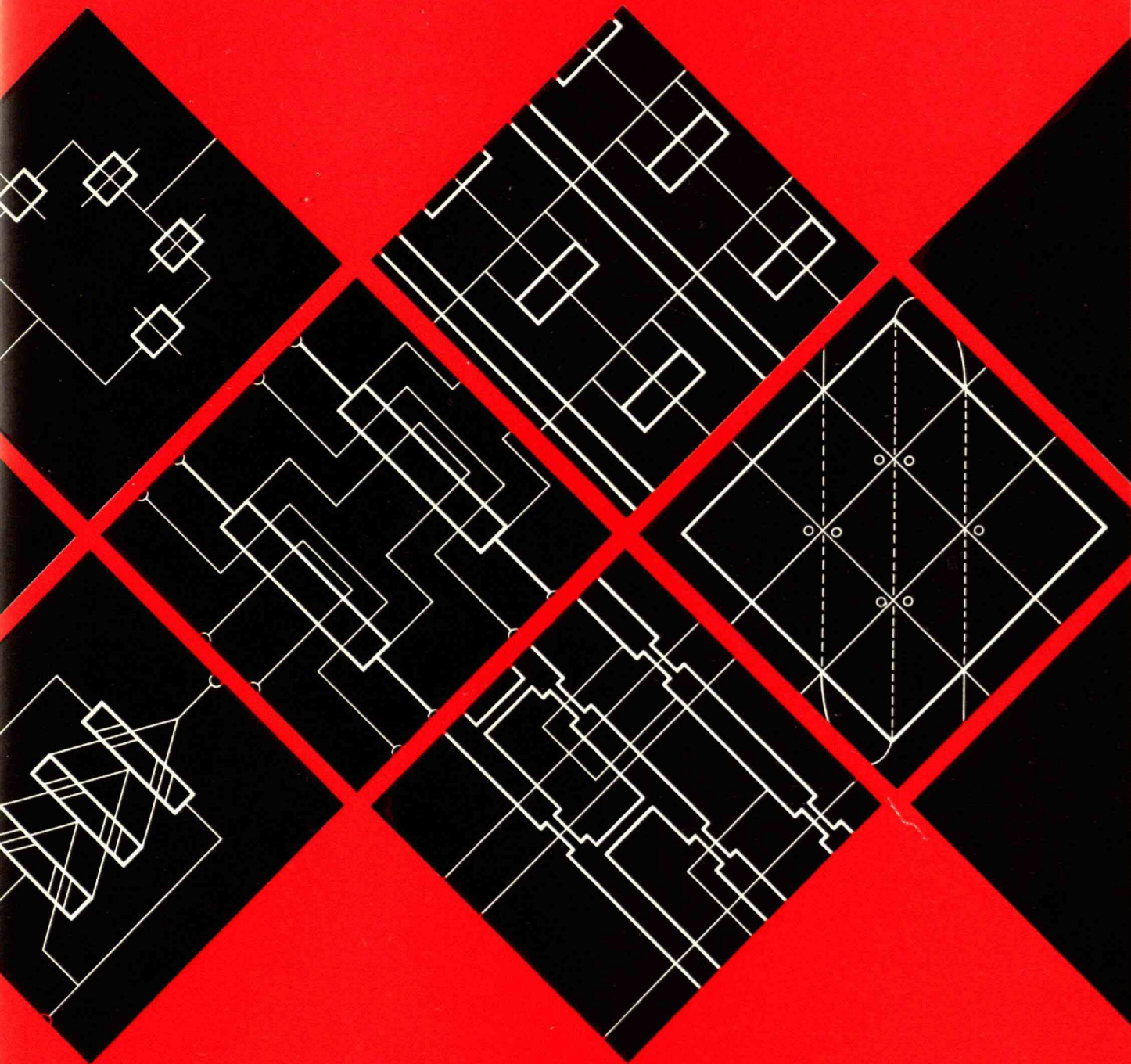


Technology Review

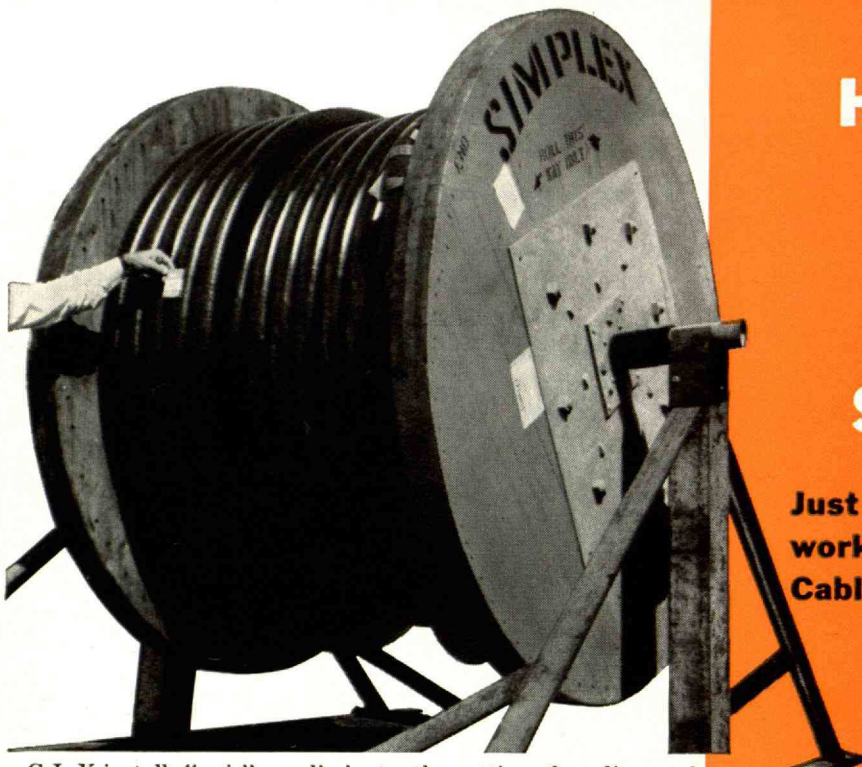
JULY, 1961: M.I.T. Centennial Year Commencement Issue



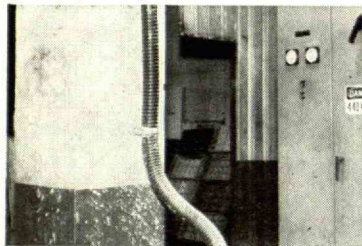
technology review

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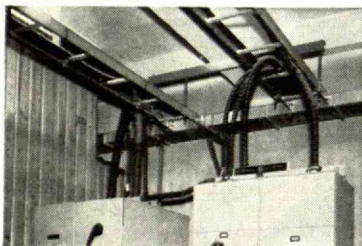
C-L-X installs "as is" . . . eliminates the cutting, threading, and pulling operations necessary with conventional duct or conduit.



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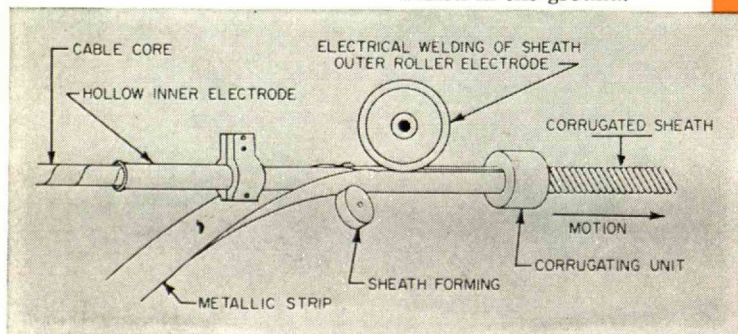
C-L-X is easily trained anywhere, in continuous, long-length runs.



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In the minds of GCR researchers, the moon is always up there, big and challenging. They see space stations, too. And Venus and Mars—and further. These visions are linked with the exciting realities of their work in solid propellants and propulsion systems: multi-million-pound-thrust segmented boosters; nitroplastisol and rubber-base propellants; hybrid rockets; and much more. GCR researchers use the most advanced tools available—including the new million-dollar lab shown below. And they can see their ideas brought to life and put to the test on the spot in GCR's modern manufacturing and testing facilities.

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NETWORK of MOVING & STORAGE SERVICES

Feedback

Buildings Featured

FROM MOISE H. GOLDSTEIN, 'C4

An article "A Century of American Building" in the [April] Technology Review shows only two photographs of the more contemporary work, leaving the gap from the earlier date up to 1958. There should have been many more photographs of some of the excellent illustrated material of the later years. Do you not think that Mr. Mann, the author of the article, could be induced to supplement his very interesting paper with an additional article?

*Goldstein, Parham & Labouisse
New Orleans 12, La.*

Will Martin Mann, '41, please consider Mr. Goldstein's request? Buildings in the Centennial architectural exhibit at M.I.T. which were not shown in The Review were:

Pioneer Works: The Roots of Contemporary Structures; Iron Fronts and Early Skyscrapers

St. Mary's Church, Chicago, 1833. Augustine D. Taylor, builder.

Manufacturing Building, New York City, 1848-49. James Bogardus, builder.

Printing Plant, Harper and Brothers Printing Company, 1854-55. John B. Corlies, architect; James Bogardus, builder.

Department Store, E. V. Haughwout and Company, New York City, 1857. John P. Gaynor, architect; Daniel Badger, builder.

Produce Exchange, New York City, 1881-84. George B. Post, architect and engineer.

Tower Building, New York City, 1888-89. Bradford Gilbert, architect.

Wide-Span Domes and Vaults in the Nineteenth Century

United States Capitol, Washington, D.C., 1792-1828, 1856-64. William Thornton, Thomas U. Walter, and others, architects; Montgomery C. Meigs and August Schoenborn, engineers.

(Continued on page 60)



PROFESSORS RETIRING this year (listed on page 4) include B. Alden Thresher, '20, Director of Admissions, who is shown above at a party given for him.

This issue concludes Volume 63 of The Review. Number 1 of Volume 64 will be published October 27, 1961. An index to Volume 63 will be supplied this fall to readers requesting it.

EDITOR: Volta Torrey; BUSINESS MANAGER: R. T. Jope, '28; CIRCULATION MANAGER: D. P. Severance, '38; EDITORIAL ASSOCIATES: J. J. Rowlands, Francis E. Wylie, John I. Mattill; EDITORIAL STAFF: Ruth King, Muriel R. Roberts; BUSINESS STAFF: Madeline R. McCormick, Marianne G. Hagerty; PUBLISHER: H. E. Lobdell, '17.

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Cryotron circuitry inspired Ralph Cornburn, '47, The Review's cover designer, and will be dealt with in a special M.I.T. summer course described on page 52.

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A review of "The Architecture of America" by John Burchard, '23, and Albert Bush-Brown.

Individuals Noteworthy



Pietro Belluschi

Honorary Alumni

NEWLY ELECTED honorary members of the M.I.T. Alumni Association are Dean Pietro Belluschi of the School of Architecture and Planning and Professor Robert R. Shrock of the Department of Geology and Geophysics.

Born in Italy in 1899, Dean Belluschi studied engineering at the University of Rome and came to this country on an exchange scholarship in 1923. At M.I.T. since 1951, he has gained widespread recognition as one of the country's foremost architects.

Professor Shrock was born in Indiana in 1904, educated at Indiana University, and a member of the University of Wisconsin's faculty before he came to M.I.T. in 1937. He has headed his department since 1949, contributed to the literature of the earth sciences, and served as a geological consultant to many companies and government bureaus.

Faculty Promotions

THE M.I.T. Corporation's Executive Committee has approved the appointment of *Carroll L. Wilson*, '32, as Professor in the School of Industrial Management and the promotion to the rank of Professor of *J.*



Robert R. Shrock

Harvey Evans in the Department of Naval Architecture and Marine Engineering, *Roland B. Greeley* in the Department of City and Regional Planning, and *Thomas B. King* in the Department of Metallurgy.

Faculty Retirements

PRESIDENT Julius A. Stratton, '23, has announced the retirement of nine members of the Faculty:

James A. Beattie, '17, Professor of Physical Chemistry.

E. P. Brooks, '17, Professor of Industrial Management.

Arthur C. Hardy, '18, Professor of Optics and Photography.

Richard F. Koch, Assistant Professor of Modern Languages.

Frank M. Lewis, Professor of Marine Engineering.

John R. Markham, '18, Professor of Aeronautical Engineering.

B. Alden Thresher, '20, Director of Admissions.

Walter G. Whitman, '17, Professor of Chemical Engineering.

Karl L. Wildes, '22, Professor of Electrical Engineering.

"All have given long and devoted service to the Institute," said Dr. Stratton, "and we sincerely hope all will continue in one way or another their close associations with the Institute."

Student Affairs Dean

JOHN T. RULE, '21, Dean of Students since 1956, will turn over his administrative duties to Professor Kenneth R. Wadleigh, '43, this summer and return to teaching as Professor of Engineering Graphics. Professor Wadleigh's title will be Dean of Student Affairs, but he will retain his professorship in the Department of Mechanical Engineering, where he has been head of the heat power laboratory.

In announcing the change, President Julius A. Stratton, '23, noted that there have been "significant advances in every aspect of student life at the Institute" during Dean Rule's administration, and expressed his delight that "a member of our faculty with the interest and competence of Professor Wadleigh is to undertake with enthusiasm this great responsibility."

Professor Wadleigh joined the Faculty in 1946 after serving as a Naval officer flight test engineer with the National Advisory Committee



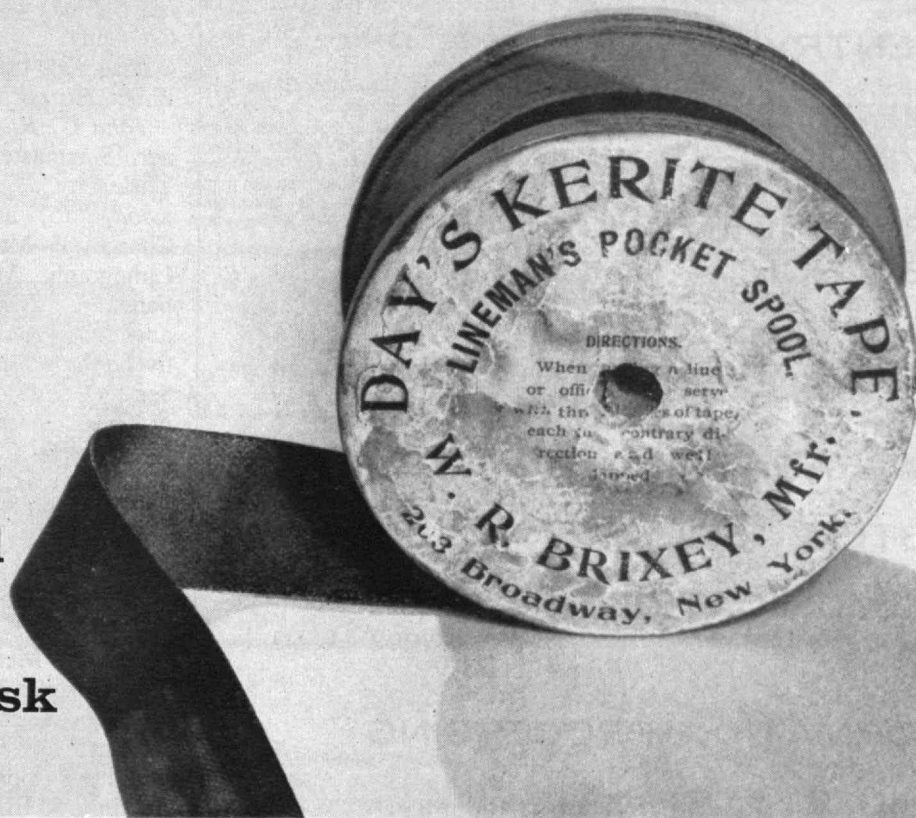
Kenneth R. Wadleigh, '43

for Aeronautics. He received the Goodwin Medal for teaching in 1952, and was a visiting lecturer at Cambridge University in England in 1953-1954.

He has maintained a constant interest in student affairs since coming to M.I.T. as an undergraduate in 1939, and in his new post will devote special attention to educational matters affecting undergraduates. He will work closely with the Deans of the Schools, the Heads of Depart-

(Continued on page 6)

Found in an old desk



When this spool of tape was new, the twentieth century had not yet been born. Salty old Captain Brixey owned the Kerite business and was making cable history.

His Kerite wire had been used for a 300-mile railway block-signal system . . . the longest aerial cable of its time. A Kerite 1,000,000 circular mil power cable laid in the Gowanus canal was already ten years old in 1908 and "just as good today as it ever was and giving the best possible service."

One of the Captain's most colorful projects was the Kerite cable laid along the Panama Canal, the first telegraph connection between North and South America. The joints were made

with Kerite splicing compound (Kerite insulation in tape form). These joints were not only dielectrically sound but had to match the cable insulation in terms of insulation resistance and capacity in every way. Thirty miles of this cable were submerged, but in jungle and water, cable and tape stayed in service for over forty years.

A lot of time has gone by since this spool was young.

Yet this old tape is apparently as flexible and strong as on the day it was made.

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Individuals Noteworthy

(Continued from page 4)

ments, and the Committee on Undergraduate Policy. As in the past, his office will be concerned with student counseling, the residential environment, and other aspects of student life outside the classroom.

Professor Wadleigh's wife is the daughter of the late Professor Donald S. Stockbarger, '19, and they have two children.

New Posts

NAMED in the news recently were the Alumni whose elections, promotions, and appointments are reported below:

Thomas A. Fearnside, '31, as Vice-president, Stone and Webster Engineering Corporation . . . *John Page*, '31, as Chief Engineer, Chicago Office, United States Gypsum Company . . . *Donald G. Fink*, '33, as Vice-president for Research, Philco Corporation;

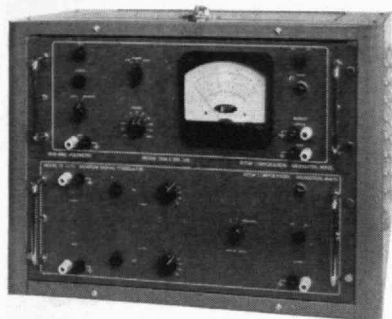
John C. Russell, '35, as a partner, Singmaster and Breyer, New York City . . . *Willard P. Greenwood*, '36, as Vice-president in Charge of Manufacturing, Forbes Lithograph Manufacturing Company . . . *Evan A. Edwards*, '37, and *M. Wren Gabel*, '39, respectively, as Assistant Director, Film Services Division, and as a member of the Executive Committee, Eastman Kodak Company;

Thacher H. Fisk, '39, as President, United States Trademark Association . . . *Monroe R. Brown*, '42, as Vice-president-Administration, Piasecki Aircraft Corporation . . . *Edward O. Vetter*, '42, as President, Metals & Controls Inc. . . . *Virgilio Barco-Vargas*, '43, as Colombian Ambassador to Great Britain . . . *Robert L. Plouffe*, '50, as Vice-president, Director of Engineering, STELMA, Inc., Stamford, Conn.

Leroy W. Janson, '48, and *Stanford B. Jones*, '51, respectively, as Vice-president in Charge of Manufacturing and Engineering, and as Chief Engineer, Sprague and Henwood, Inc., Scranton, Pa. . . . *Zenas Crocker*, 3d, '52, as Executive Vice-president, Nixon-Baldwin Chemicals, Nixon, N.J. . . . *Robert T. Donohue*, '53, as Director, Systems Research Laboratory, Geophysics Corporation of America.

(Continued on page 10)

AERODYNAMIC INSTRUMENTATION · RANDOM SIGNAL MEASUREMENT INSTRUMENTS



RANDOM SIGNAL VOLTMETER—Model 12A1

A true rms voltmeter with long averaging time, high peak factor and extended low frequency response. WRITE FOR BULLETIN 55.

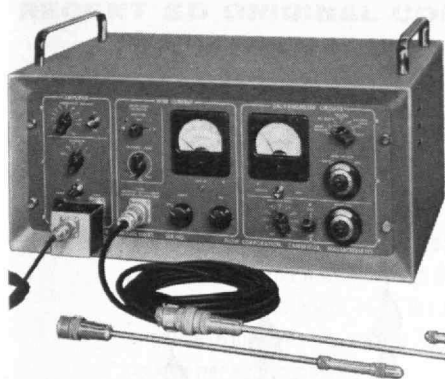
RANDOM SIGNAL CORRELATOR—Model 13A1

Provides an output voltage whose mean square value is proportional to the cross correlation between any two input signals. WRITE FOR BULLETIN 58.

SPECIFICATIONS

Frequency Range	2 cps to 250 kc, ± 2 db
Time Constant	16 seconds
Peak Factor	10 or more

Frequency Range	2 cps to 250 kc, ± 2 db
Input Signal Range	20 mv rms to 40 v peak to peak, each channel



HOT WIRE ANEMOMETER—Model HWB2

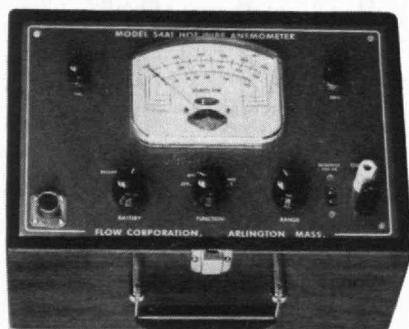
Single channel anemometer whose amplifier has continuously variable RC compensation to match any hot wire with a time constant between 0.23 and 30 milliseconds. WRITE FOR BULLETIN 36B.

TWO-CHANNEL HOT WIRE ANEMOMETER SYSTEM Model CCB

System comprised of Model HWB2 Hot Wire Anemometer, Model HWI Sum-Difference Control Unit, and Model 12A1 Random Signal Voltmeter in single cabinet. Model CCB can be used to measure longitudinal and transverse turbulence components. WRITE FOR BULLETIN 57.

SPECIFICATIONS

Correct Response	2 — 100,000 cps
Output Impedance	200 ohms (cathode follower)
Wire Current Circuits	Constant heating current supply, 0 — 300 ma, front panel metered and controlled.
Galvanometer Circuits	Heating current measurement — $\pm 1/4$ ma. Hot wire d.c. voltage measurement ± 1 mv.

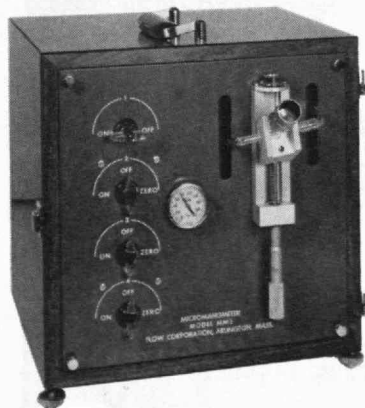


HOT WIRE ANEMOMETER—Model 54A1

A completely transistorized circuit maintains constant the resistance ratio of a hot and a cold filament by means of a feedback amplifier. Provides a continuous accurate measurement of the mass velocity of air or other gases. Velocity is read directly on a meter and an external output is provided for chart recorder or oscilloscope. WRITE FOR BULLETIN 61.

SPECIFICATIONS

Standard Meter Range	A 0-1000 fpm B 1000-2000 fpm C 2000-4000 fpm
Accuracy	0-1000 fpm — 10 fpm $\pm 5\%$ of reading 1000-4000 fpm—better than 5% of reading
Probe Immersion Temperature Range	32° F to 200° F Calibration charts furnished.
Sensing Unit	Probe is $3/8$ " dia., 9" long. Features replaceable, factory calibrated plug-in tip.



MICROMANOMETER—Model MM3

Model MM3, which operates on a nulling principle first proposed by Prandtl, permits the precise measurement of small pressure differences. Butyl alcohol is the standard manometer fluid although a variety of other fluids including mercury may be used. Pressure differences may be read between a reference and any of three pressure channels without changing connections. Optimum resolution is achieved through the use of an optical meniscus reader and backing mirror. WRITE FOR BULLETIN 17A.

SPECIFICATIONS

Maximum Pressure Difference	2" of manometer fluid
Resolution	± 0.0001 " of manometer fluid
Accuracy	± 0.0002 " of manometer fluid



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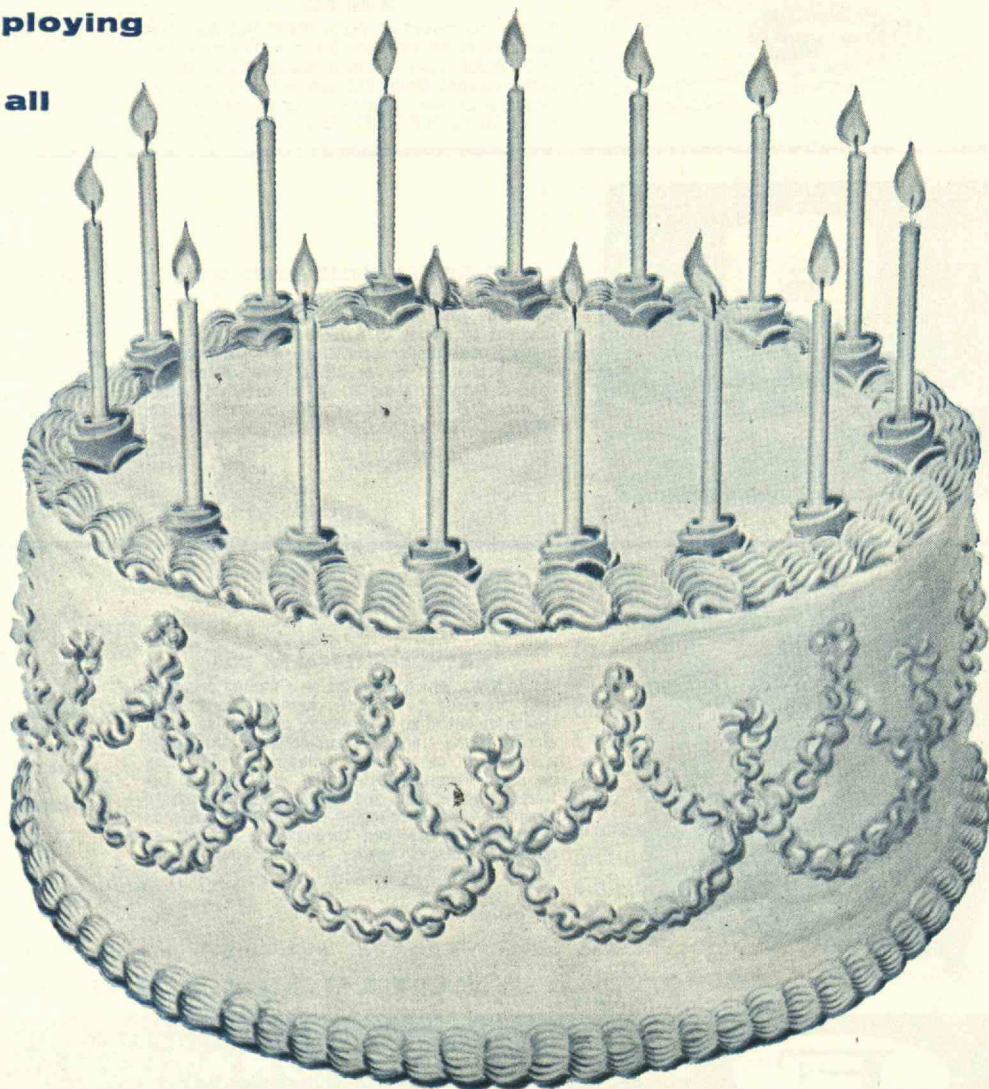
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12 countries for
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MALEIC ANHYDRIDE AND FUMARIC ACID—SD process accounts for 19 plants in 8 countries for 17 companies. About $\frac{2}{3}$ of world's maleic anhydride capacity, 250,000,000 pounds per year capacity.

PHTHALIC ANHYDRIDE—4 plants for 3 companies in 3 countries. Plus NEW ortho-xylene convertible catalyst shifts economics of phthalic anhydride in favor of ortho-xylene.

Liquid Phase Oxidation

OXIDATION OF XYLENES—by the fundamentally new M-C Process (once an SD affiliate)—5 plants in 3 countries for 5 companies. Terephthalic acid, isophthalic acid, phthalic anhydride, trimellitic anhydride.

NEW ADIPIC ACID PROCESS—by air oxidation of cyclohexane—1 plant.

Monomers and Polymers

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NEW A.G.F.O. POLYETHYLENE PROCESS—simplified plant—1 plant.

Chlorinated Compounds

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CHLORINATED METHANES—1 plant.

Fermentation

CITRIC ACID—2 plants.

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New Cyclohexanone, Cyclohexanol, Caprolactam Processes from Cyclohexane

New Epichlorohydrin Process

New Isomerization and Crystallization Techniques for Manufacture of Ortho-Xylene, Para-Xylene, Ethylbenzene, from Mixed Xylenes

New Vinyl Acetate Process

New Styrene Process

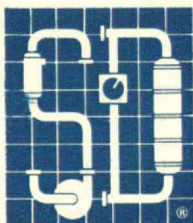
And Other Processes

**PLUS MANY THIRD PARTY
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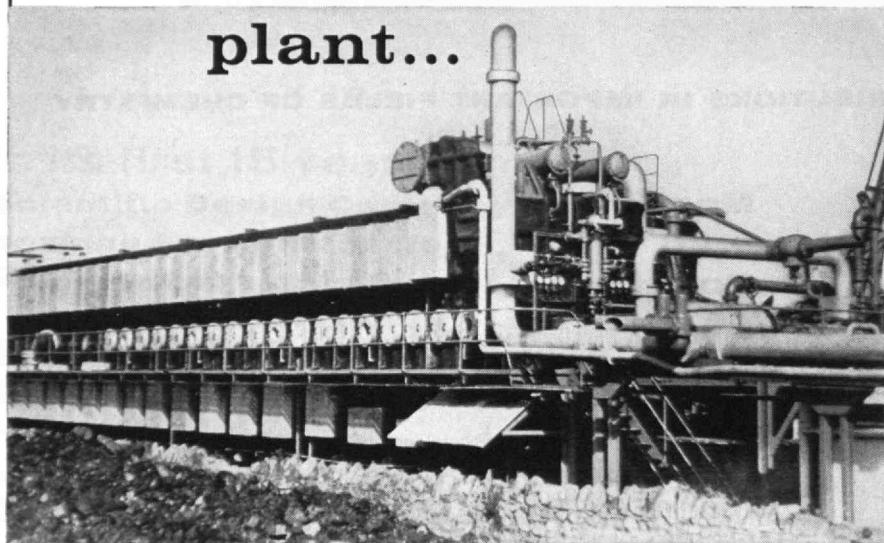
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Individuals Noteworthy

(Continued from page 6)

John M. Lessells: 1888-1961

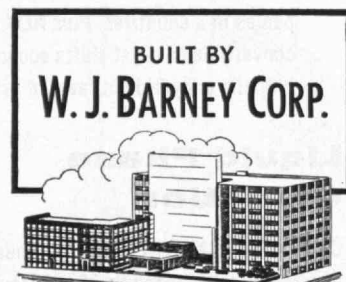
A MEMBER of the M.I.T. Faculty for 25 years, John M. Lessells, Associate Professor of Mechanical Engineering, Emeritus, died in Cambridge on May 17.

Born in Scotland February 5, 1888, he attended Heriot Watt College in Edinburgh and the University of Glasgow. During World War I, he served Rolls-Royce and the British War Office. He came to the United States in 1920 and for 11 years was with Westinghouse Electric and Manufacturing Company as manager of the applied mechanics division and later as engineering manager of the turbine and diesel department. As a consulting engineer he was responsible for some of the mechanical details of the 200-inch telescope at Mount Palomar.

Professor Lessells had been awarded the Bernard Hall Prize of the Institution of Mechanical Engineers in 1926, and shared the Levy Medal of the Franklin Institute in 1941. He wrote many professional papers and for 15 years was technical editor of the *Journal of Applied Mechanics*.

He is survived by his wife, Gladys Jackson Lessells.

(Continued on page 74)



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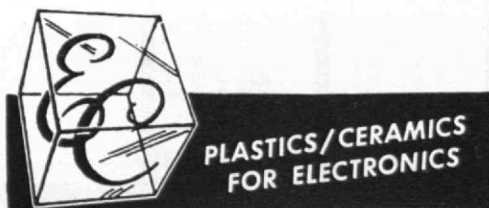
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1956

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Dr. David J. Epstein—Consultant 1949
1956

Scott H. Foster 1934

William R. Cuming 1943

Carroll I. Johnson 1950

Dr. Samuel J. Mason—Consultant 1947
1952

George E. Niles 1940

Dr. Paul E. Rowe 1948

Robert G. Siff—Consultant 1944

Russell Stetson 1930

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the concept

HYDRONAUTICS . . . a revolution in the science of hydrodynamics . . . the application of modern research techniques to the solution of fluid flow problems in the naval and industrial fields. HYDRONAUTICS is fast becoming part of our technical language . . . the word . . . the concept . . . the company.

the company

The HYDRONAUTICS staff includes recognized leaders in their fields . . . they are in the forefront of new and bold developments including 100 knot supercavitating hydrofoil boats, high speed displacement hulls, compact pumps, the world's largest supercavitating propellers, and other dramatic new concepts in ship propulsion.

the challenge

HYDRONAUTICS, Incorporated is unique in its scope; our specialists possess "whole spectrum" capabilities for research in hydrodynamics and related subjects. They are now engaged in:

Theoretical Research on supercavitating and ventilated flows, hydrofoil craft in a seaway, wave resistance of ships, hydrodynamic noise, underwater ordnance, and flows in and under ground effect machines.

Advanced Engineering and Design of hulls, hydrofoil systems, hydraulic pumps, nozzled propellers and subcavitating and supercavitating propulsion systems.

Experimental Research on cavitation damage to materials, ground effect machines, turbulence, hydrodynamic noise and boundary layer effects.

HYDRONAUTICS joins with its own M.I.T. men in sending best wishes to M.I.T. on the celebration of its 100th anniversary:

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Vice-President and Director

Professor Philip Mandel, (XIII)
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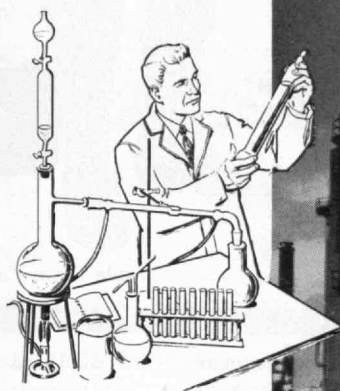
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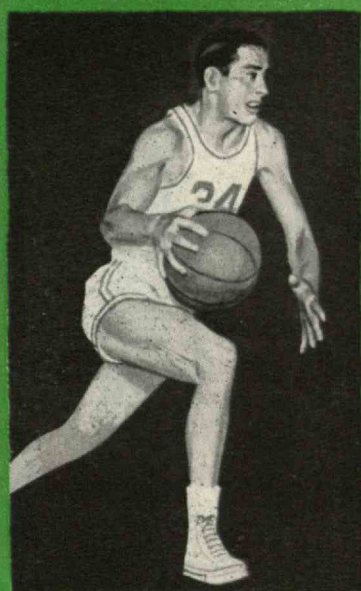


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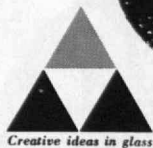
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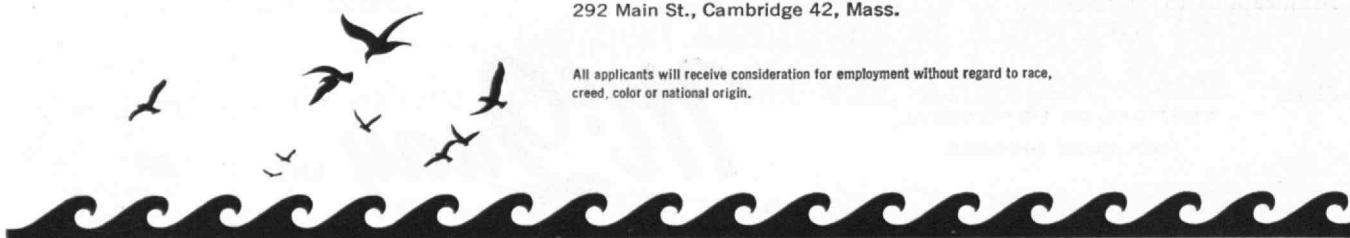
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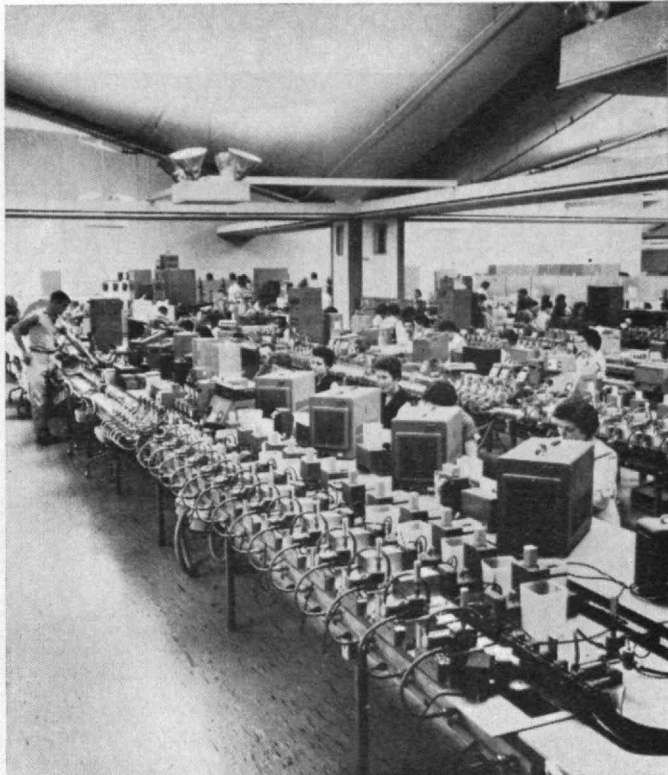
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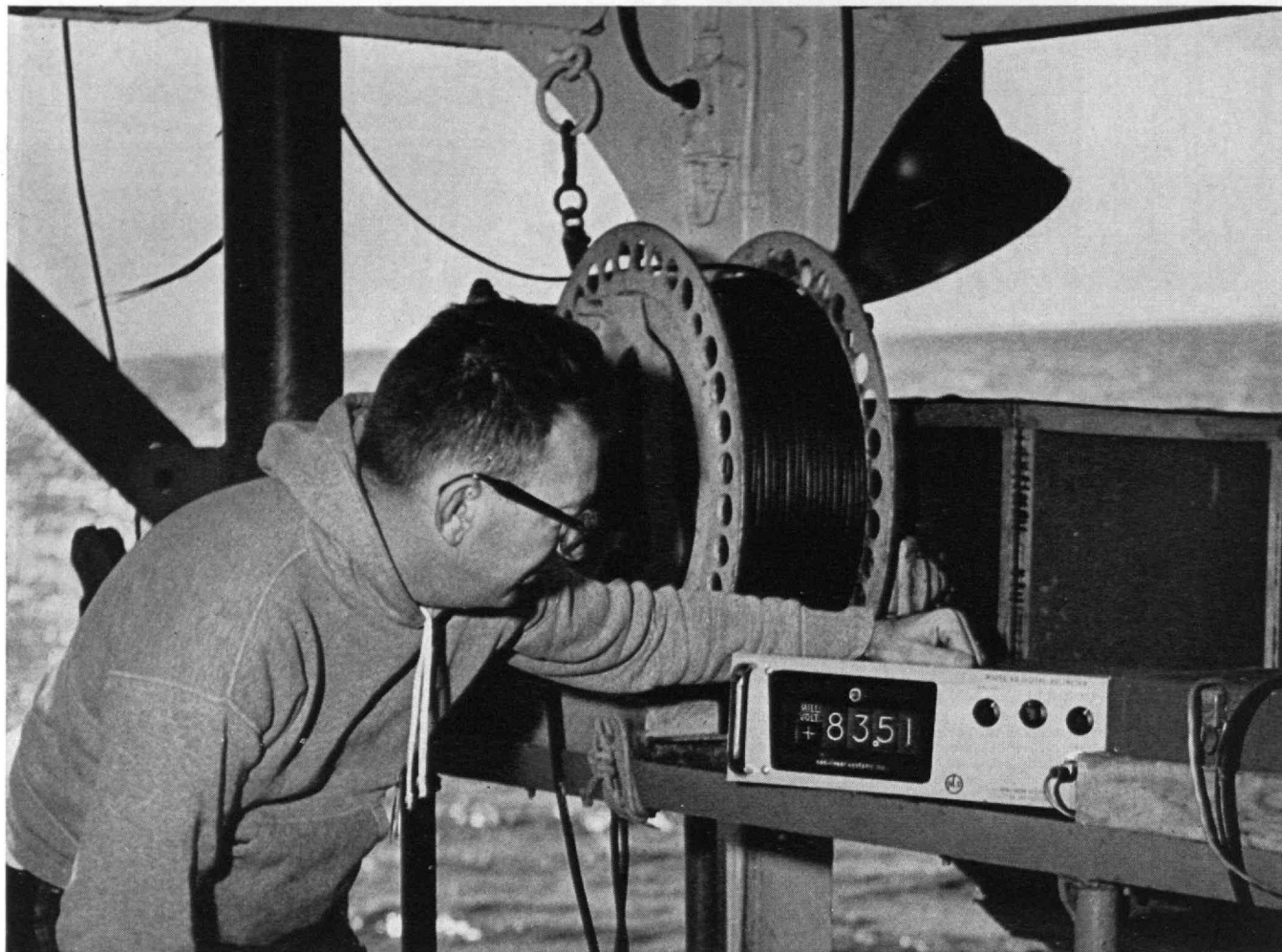
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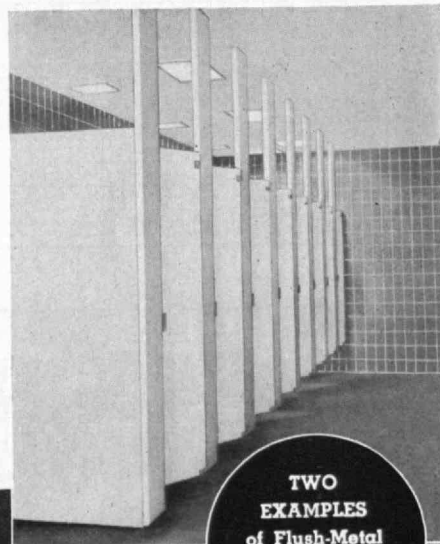
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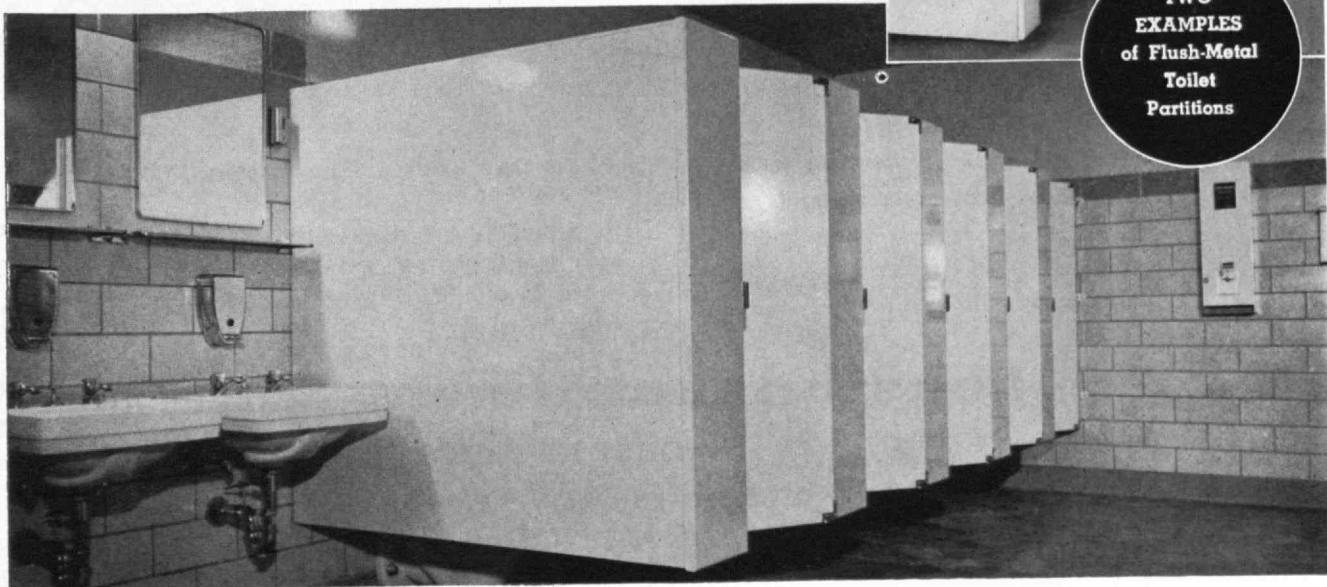
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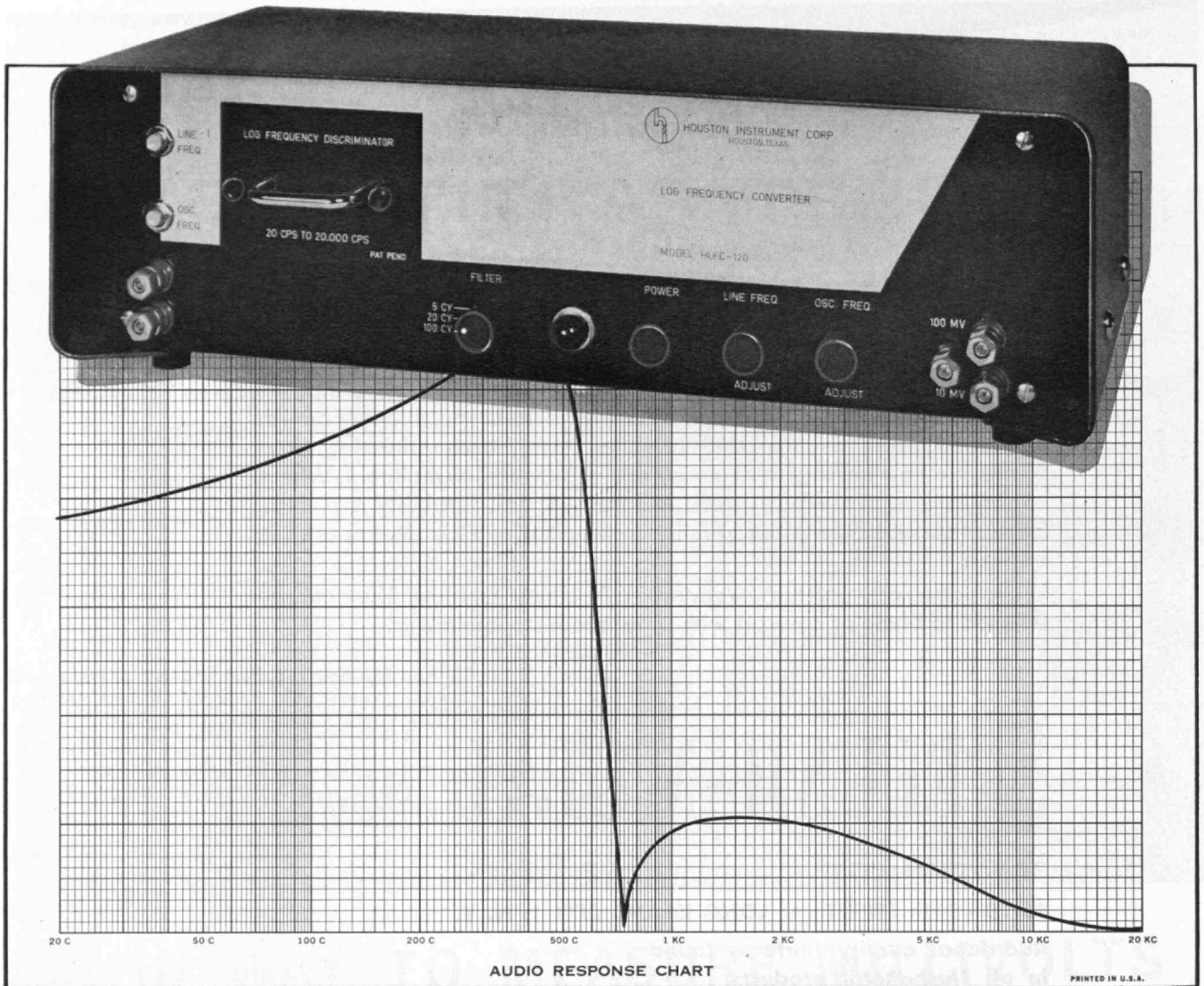
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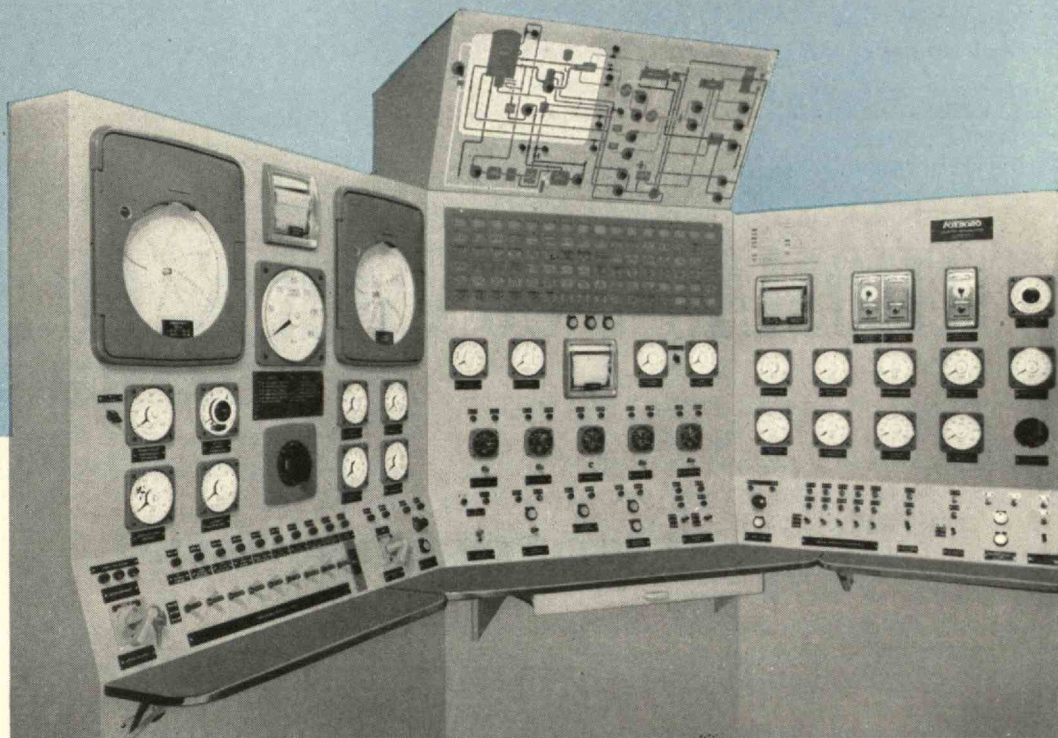
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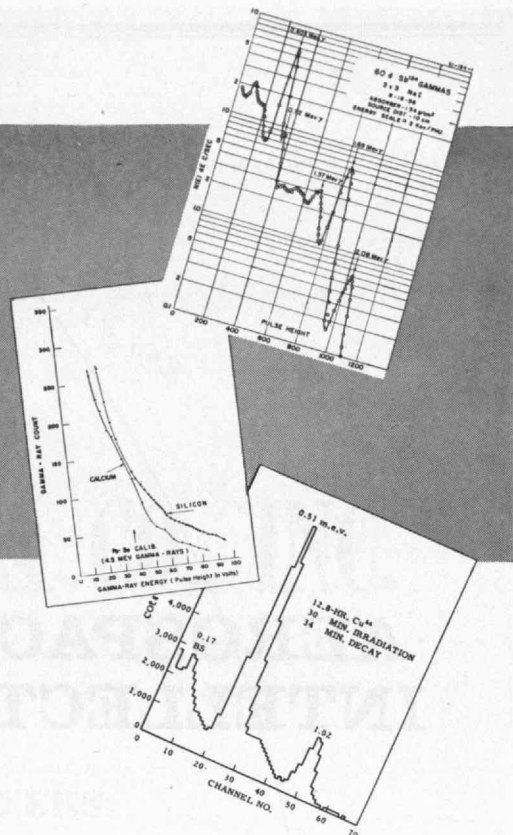
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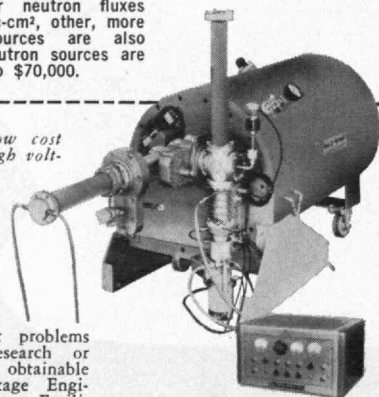
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Trend Of Affairs



Second Century Fund Progress

REPORTING to Alumni gathered on campus on June 12, Second Century Fund leaders announced that they had enlisted thousands of workers and received pledges amounting to \$40,250,000. The sum being sought in their campaign to strengthen M.I.T. is \$66,000,000.

Class gifts totaling nearly \$750,000 were announced at the annual Alumni Luncheon in the Great Court, and spokesmen for all three classes reporting gifts this year promised that final figures would be higher. The classes, their representatives, and the sums given to date were: The Class of 1911, Howard D. Williams, \$110,954; the Class of 1921, Raymond A. St. Laurent, \$440,300; and the Class of 1936, Robert E. Worden, \$195,787.

Chairman James R. Killian, Jr., '26, of the Corporation, acknowledged these gifts, and also spoke at a forenoon meeting of workers for the fund. The Institute, he emphasized, now is in a favorable position "to exert unprecedented leverage to strengthen American education."

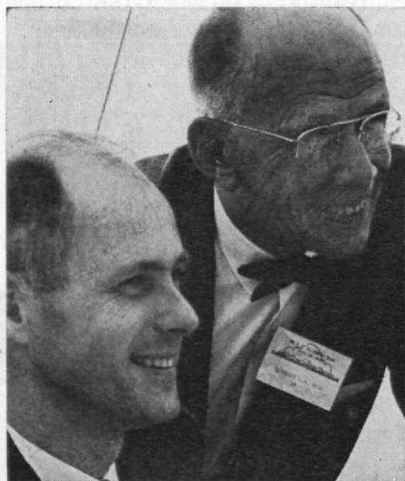
General Chairman John J. Wilson, '29, presided and spoke at the fund workers' meeting. He praised in particular the work being done by Donald P. Severance, '38. Others who spoke were Philip H. Peters, '37, Area

Organization Chairman; Joseph R. Mares, '24, of Houston; Robert E. Worden, '36, of Philadelphia; and John A. Long, '33, and Earl P. Stevenson, '19, of Boston.

The SCF Chairman's Gift

JOHN J. WILSON, '29, Secretary of the M.I.T. Corporation and General Chairman of the Second Century Fund, and Mrs. Wilson have contributed \$500,000 to the fund in the form of an endowed professorship.

In announcing the gift, President Julius A. Stratton, '23, said: "This generous gift from Mr. and Mrs. Wilson recognizes that the heart of any great educational institution is its faculty, and it is to the outstanding competence of its faculty that M.I.T. owes its reputation. We need to continue to improve faculty salaries, and we are counting on the establishment of funded professorships, of which we have too few, as an aid to this improvement. Such professorships serve this dual purpose of strengthening our faculty and of releasing funds to raise the Institute's salary base. This gift from Mr. and Mrs. Wilson establishes the second of eight funded professorships which we are seeking under our Second Century Fund. For this reason, their generosity is especially timely and gratifying."



THE NEW PRESIDENT of M.I.T.'s Alumni, D. Reid Weedon, Jr., '41, at left, and the retiring president, Clarence L. A. Wynd, '27, both received gavels at the Alumni Day Luncheon.



THE CLASS OF 1911 gave Dr. Killian a clock that runs backward at the Alumni Luncheon. Howard D. Williams, '11, is at the left, and the lady in the center is Mrs. Julius A. Stratton.

WITH THE MACE (at top of page), Mr. Wynd led the commencement day procession. The exercises are reported with additional pictures on pages 34 to 39 of this issue of The Review.

A \$3,275,000 Contract From ARPA

OF CONTRACTS totaling \$13,375,000 recently made with five universities by the Advanced Research Projects Agency under the Department of Defense Interdisciplinary Materials Laboratory program, M.I.T. received \$3,275,000.

Jack P. Ruina, Director of ARPA, announced the contracts, and President Julius A. Stratton, '23, announced that M.I.T. would use the funds for the support of basic research in the new Center for Materials Science and Engineering.

The study of materials is being pressed because of the requirements of new technologies and the need for a better understanding of fundamental processes underlying the performance of both familiar and new materials. The scientific objectives of the program now planned will lie principally in four active fields considered likely to lead to important results and to attract an increasing number of students:

Magnetic and low-temperature research.

Semiconductors and their application to devices.

Electronic materials development and preparation.

Solid-state structure studies by advanced techniques.

The new program will increase M.I.T.'s materials research about 25 per cent and require additions to the Faculty and staff. It will be organized under the direction of a committee headed by Institute Professor John C. Slater.

The Alumni Day Program

THIRTEEN classes held reunions on the weekend before Alumni Day and more than 1,000 Alumni and guests attended the departmental reunions and other events on the M.I.T. campus on June 12.

Albert O. Wilson, Jr., '38, was chairman and John L. Danforth, '40, was deputy chairman of the committee which arranged the luncheon, the symposium on "The University in World Affairs" (reported on page 42), the dinner in the Rockwell Cage, and the concert in the Kresge Auditorium by the Boston Pops Orchestra. L. Herbert Bigelow, '01, provided flowers from Hawaii for the ladies, and Masaru Kametani, '25, brought greetings from Japan.



JOHN J. WILSON, '29, announced that the Second Century Fund totaled \$40,250,000 on June 12.



RAYMOND A. ST-LAURENT, '21, reported that the gift of the 40-Year Class would exceed \$440,300.



ROBERT E. WORDEN, '36, said that the gift from members of the 25-Year Class would exceed \$195,787.

A New Edition of "Cybernetics"

THE M.I.T. PRESS and John Wiley and Sons, Inc., have issued a new edition of Institute Professor Norbert Wiener's 1948 work on "Cybernetics," containing corrections and additions by the author.

This famous book gave the study of "control and communication in the animal and machine" the name by which it now is known around the world. In the new edition, the author shows that man-made machines can be endowed with the power to learn and to reproduce themselves, and says that this possibility is leading to a new attitude in both engineering and biology.

How Protein Is Produced

WITH radioisotopes and a molecular "fingerprinting" technique developed at M.I.T., Howard M. Dintzis, research associate in Biology, has ended some of the uncertainty about how cells produce protein.

The protein molecules found in all living things are chains of amino acids. Whether these acids are "stamped" into macromolecules, or assembled first in subsets, or added randomly or in an orderly way, has been the subject of much speculation.

Dr. Dintzis has found strong indications that in certain rabbit cells, acids are added to the chains in a steady, sequential way. Starting at one end, about two acids per second are added until the other end is reached and the job is done.

The cells he studied produce hemoglobin. He took apart the molecular chains being produced in these very tiny factories, and he labeled the material available to them thenceforth with tritium and radioactive carbon. After they had begun zipping these labeled acids into the chains they were producing, Dr. Dintzis located the tagged pieces in the output. To do this with sufficient accuracy, he employed a combination of electrophoresis and chromatography, called "fingerprinting," which was developed by Vernon M. Ingram, Professor of Biochemistry.

A report on "Assembly of the Peptide Chains of Hemoglobin" by Dr. Dintzis appeared in the *Proceedings of the National Academy of Sciences* in March, 1961, and he is now preparing a further report.

The Crosby Lectureship in Geology

THE ESTATE of the late Irving Ballard Crosby, '17, has been bequeathed to M.I.T. to establish a lectureship in geology in memory of his father, William Otis Crosby, '76, one of the earliest geology graduates of the Institute and a member of its Faculty for more than 30 years. The first holder of this lectureship will also be a noted alumnus, Joseph L. Gillson, '21.

Professor Robert R. Shrock, Head of the Department of Geology and Geophysics, announced the appointment of Dr. Gillson to give a two-term series of lectures on industrial minerals next year, at the same time that the bequest was announced.

William Otis Crosby entered M.I.T. in 1871, only six years after the first class was registered. He became an assistant in paleontology in 1875, and then served successively as instructor in Geology (1878-1883), assistant professor (1883-1902), associate professor (1902-1906), and professor (1906-1907). He was chairman of the Department of Geology from 1902 until 1907, when he retired at the age of 57 because of deafness. Despite this handicap he continued consulting work until his death on December 31, 1925.

Irving Ballard Crosby, the only child of William Otis Crosby, studied at both M.I.T. and Harvard and was associated for a few years with his father in consulting work. He then developed his own practice and was an independent consulting engineering geologist from 1925 until his death on September 18, 1959. His home was at 16 Ash Street in Cambridge, and much of his work was done in the New England States, Ontario, and Quebec. He also worked for the Corps of Engineers, U. S. Army, on such well-known sites as the Tennessee River project, the Fort Peck dam, and the St. Lawrence River project. Later his work took him to the Philippines, Chile, the Belgian Congo, India, Greece, and many other parts of the world. He was a member of many professional societies and a consultant to several government agencies.

Under terms of his bequest, scientists of note in various aspects of geology will be brought to the Institute to lecture. Dr. Gillson's series of lectures in 1961-1962 will be the first of these Crosby lectures.

Dr. Gillson, who was an assistant professor and then associate professor at M.I.T. from 1922 to 1930, served E. I. du Pont de Nemours and Company as an economic geologist for more than 30 years. He is a former president of the American Institute of Mining, Metallurgical, and Petroleum Engineers, the Society of Economic Geologists, and the American Geological Institute. He is also the author of more than 30 technical papers and received the Jackling Award in 1957 for "significant contributions to technical progress in the fields of mining, geology and geophysics."

Edgerton's Deep-Sea Cameras

BEFORE taking off to photograph more parts of the ocean's bottom this spring, Harold E. Edgerton, '27, Professor of Electrical Measurements, showed the M.I.T. Alumni Council at its May 22d meeting a half-microsecond flash of light and many of the pictures that he has obtained with such lights.

For oceanographic work, he recently has been building—and testing in the Alumni Pool—new dou-



Two of the double-ended deep-sea cameras built at M.I.T. are shown here on top of four high-power strobe lights built to be used with them. Hooking them up are Curtiss D. Wiler, '63 (left), and Professor Harold Edgerton, '27.

ble-ended cameras: At the same time that one frame of film is exposed to show what's in Davy Jones' locker, another is exposed to record the exact time, location, and whatever other data may be helpful later. Two such cameras have been built to withstand the pressure at a depth of 40,000 feet.

Professor Edgerton added that he puts in a return address when he sends a camera to such depths so that anyone finding it will know what to do with it.

This spring he was host at the Institute again to his friend Captain Jacques-Yves Cousteau and attended the presentation in Washington of the National Geographic Society's Gold Medal to Captain Cousteau.

Clarence L. A. Wynd, '27, the Association's President, presided at this final meeting for the year of the Alumni Council, and the reports presented included one from Edwin D. Ryer, '20, chairman of the Alumni Fund Board. To date, Mr. Ryer said, the Fund had received contributions totaling \$543,000 this year.

The Distribution of Heat

THE RESEARCH of Hoyt C. Hottel, '24, Professor of Fuel Engineering, has figured in the design of industrial furnaces for three decades and has been applied to many purposes. This spring the Institute of Fuel in London awarded him the Melchett Medal in recognition of his contributions to the understanding of combustion.

In a paper on "Radiative Transfer in Combustion Chambers," which he presented in London, Professor Hottel explained how the advent of computers has made it possible to determine the distribution of heat in various parts of an industrial furnace. Such analysis should make it possible to design more efficient furnaces than those produced by cut-and-try methods. It also may be useful in solving a wide range of problems, including the scatter of atomic bomb radiation and heat transfer in the plasma power units now being studied.

The Dean's Lectures at Purdue

THE FIRST LECTURES of a series honoring Dean Emeritus Andrey A. Potter, '03, of Purdue University's Schools of Engineering were given this spring at Purdue by Professor Joseph H. Keenan, '22, of M.I.T.

Professor Keenan's lectures dealt with work done in thermodynamics in recent decades, and he explained how the general relations of classical, Gibbsian thermodynamics now are deduced logically from a single axiom of stable equilibrium. The purely phenomenological character of the science has been retained, he said, but new methods have been evolved which may prove even more powerful than those of statistical mechanics.

He spoke particularly of the work of Professor George N. Hatsopoulos, '49, of M. I. T., whose idea it was to reduce the postulates of thermodynamics to a single statement; Robert B. Green, '47, now of the Baker Platinum Company; and Professor Stephen J. Kline, '52, of Stanford University.

"We have already benefited," he noted, "by making orderly a disorderly aspect of thermodynamic theory and by broadening our understanding of the phenomena of diffusion of charged and uncharged fluids. We see promise of accelerated progress in the direct conversion of heat to electricity resulting from application of thermodynamics of irreversible processes. All our experience indicates, however, that the applications to unfamiliar processes always involve review of the classical elements of our subject to sharpen our concepts and our definitions."

Impressions of Nervi

ONE OF M.I.T.'s Visiting Professors of Architecture this year was Pier Luigi Nervi, the builder of the Stadia for the 1960 Olympic Games in Rome and many other noted structures. Professor Nervi lectured in Italian, and after hearing him, Alfred M. Duca, a sculptor and research associate in Metallurgy, wrote of him as follows:

"Like Maxwell's Demon, Nervi seems literally able to get inside his materials and structures, 'coverings' as he calls them, and with rare native foresight alone builds with gravity-defying skill. In short, he has engineering judgment, that elusive quality sought in vain by all men, even great scholars, but possessed by few.

"The profile of Professor Nervi's architecture is the magnificent expression of an inspired man who has created, possibly, the most inventive and daring architectural forms of our time. . . .

"The clear direction of his work derives from a profound respect and admiration of the classic simplicity of other cultures and their aggregate engineering skills; thus enabling him to assure a constant dialogue between his material and his technology. . . .

"His architectural expression is never an arbitrary form or the fashionable idiom of the day, but a representation of current technology, fundamental and formal. Mathematical laws may evolve as Nervi's reality, but it is his full sympathy and intuition as an artist that is ultimately reflected in his appropriate use of material and the essential integrity in the particular details of his work. . . .

"Nervi is perhaps more fortunate than he knows to have lived in Italy rather than in America; had he lived



Pier Luigi Nervi and a model of Dartmouth's field house.

in America he might have become as great an architect but his talent would probably have developed along different lines. When commissions as an architect were denied him on the basis of youthfulness and lack of experience he decided to become a contractor; his bids were unbelievably lower than those of his competitors and his building times incomparably shorter. Nervi used prefabrication and production line techniques to shorten building times and thin concrete slabs reinforced with steel mesh to meet his standards of economy and beauty. . . .

"Had Nervi done his work in America he could not legally have become an architect-builder, and trade unions would have found ways to discourage his labor-saving use of prefabricated concrete for extensive construction. He could never have built with the economy and speed which set him apart from his competitors in Italy, and he would have been hampered by hopelessly outdated and outmoded building codes.

"Currently, however, his work is influencing the architecture of many countries, including America."

An Industrialist's Problem

INDUSTRY is dependent nowadays, Cecil H. Green, '23, emphasized in a talk in Australia this spring, on two key divisions of people: "those with management ability and those with scientific or technical know-how." These two types, he said, must be proficiently integrated, and "one cannot have a true and deep interest in the factor of people in business without giving attention to preparatory training, which in the end prescribes a direct interest in the process of education itself."

Mr. Green spoke at the University of Sydney as the guest of the Nuclear Research Foundation. He described the growth of Texas Instruments and Geophysical Service, and spoke warmly of assistance these companies had received from Professor Robert R. Shrock, Head of the M.I.T. Department of Geology and Geophysics. These firms now have a Student Cooperative Plan which introduces 20 undergraduates each year to industrial problems by means of lectures and assignments to company laboratories and field parties.

"The future security of the Free World," Mr. Green declared, "depends upon the interest and support which industry and government elect to give education."

Gillette Advances SCF

THE GILLETTE COMPANY has contributed \$500,000 to M.I.T.'s Second Century Fund with no restrictions on its use, but an expression of desire that preference be given to the support of basic research.

"The Gillette Company is proud to have an opportunity to contribute to the M.I.T. fund," Carl J. Gilbert, Chairman of the Board, said when the grant was announced. "We in Gillette have placed great emphasis on research and development and on engineering and owe no small measure of our success to the accomplishments of our scientific and technical staff. We feel sure that the future will see scientific and technological vision and competence playing an even greater role in our development. All of us in this community gain directly and indirectly from M.I.T.'s influence."

Chairman James R. Killian, Jr., '26, of the M.I.T. Corporation, said, "We are especially grateful to receive such a contribution from a Boston company—the first industrial corporation in New England, in fact, to make such a large grant to our Second Century Program."

"The destinies of New England and of M.I.T. are closely identified and always will be. It was the support of Bostonians that made possible the chartering of M.I.T. in 1861, and throughout its first century the Institute has been loyally supported by New England business and industry. We feel that we must depend upon New England to set the pace for corporate giving nationally."

DNA Photos from M.I.T.

ELECTRON MICROSCOPE photos made in the M.I.T. laboratory of Cecil E. Hall, '48, have figured importantly in two recent developments in the study of DNA (deoxyribonucleic acid).

Biologists regard this "chemical of heredity" as the carrier of the information needed for the production of enzymes and other proteins. Their models of the DNA molecule show two long strands of atoms twisted together into a helix, like a spiral staircase.

At Harvard, Dr. Julius Marmur and Professor Paul M. Doty have been separating and reuniting the DNA molecule's strands. By such techniques they have produced a hybrid DNA, from two different strains of bacteria, that works as well as natural DNA. Photographic evidence of this was obtained with Dr. Hall's help.

At the Sloan-Kettering division of the Cornell Medical College, Dr. Lieke F. Cavalieri and Mrs. Barbara Hatch Rosenberg have found evidence that some DNA consists of four strands rather than two. Photographic evidence in support of this contention also has been obtained in Dr. Hall's laboratory.

One of the photos of material supplied by Dr. Cavalieri is reproduced below. The arrows indicate *Diplococcus pneumonia* DNA particles which are separating. If the branches were single strands, they would probably be coiled randomly. Their thickness and rigidity suggest that each branch contains two strands.

A Prize to Crossroads Africa

EIGHT M.I.T. students expect to participate this year, as others did last year, in Crossroads Africa, an international good-will program financed by private sources and the participants. In recognition of the opportunity this organization has given students to exemplify the ideals of tolerance, individual worth, and brotherhood, it was given a \$500 Karl T. Compton Prize at this year's Awards Convocation. Haim Alcalay, '61, accepted the award, and students will use the fund in their work.

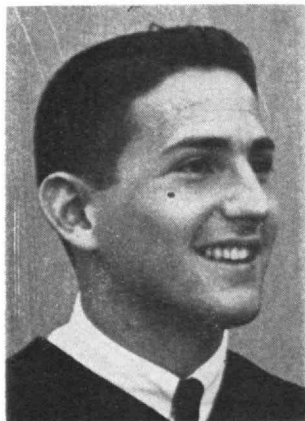


An electron microscope photo of DNA, shadowed with platinum on a mica substrate, and magnified 100,000 times.



1,166 Students Receive Degrees From M.I.T.

AT ITS 95th commencement exercises, the Massachusetts Institute of Technology awarded 1,249 degrees to 1,166 students. The total included 99 doctoral degrees, 62 advanced engineering degrees, 421 master's degrees, and 667 bachelor's degrees. Each of 83 students received two degrees.



'61's President Jaffe

The Rockwell Cage was filled for the exercises there on June 9 and hundreds more applauded close-up televised views of the proceedings projected on a large screen in the Kresge Auditorium.

the academic procession and James R. Killian, Jr., '26, Chairman of the Corporation, presided. President Julius A. Stratton, '23, presented the degrees as Deans of the schools called the roster of graduates. Investors of the Hood were Acting Dean John T. Norton, '18, of the Graduate School and Professor Patrick M. Hurley, '40, Chairman of the Faculty.

Clarence L. A. Wynd, '27, President of the Alumni Association, led the academic procession and James R. Killian, Jr., '26, Chairman of the Corporation, presided. President Julius A. Stratton, '23, presented the degrees as Deans of the schools called the roster of graduates. Investors of the Hood were Acting Dean John T. Norton, '18, of the Graduate School and Professor Patrick M. Hurley, '40, Chairman of the Faculty.

Frank Stanton, President of the Columbia Broadcasting System, gave the address. The Reverend William Augustine Wallace, O. P., gave the invocation and the music was provided by Victor Henry Mattfeld, organist, and the M.I.T. Brass Choir conducted by John Dean Corley, Jr.

Officers who led the Class in the procession were Ira J. Jaffe, President; Peter R. Gray, Vice-president; Joseph Harrington, 3d, Secretary; and Jerome H. Grossman, Treasurer.

Seventeen members of the Class of 1911, with Admiral Luis de Florez as their marshal, and nine retiring members of the Faculty were guests of honor. Other

CENTENNIAL celebration leaders and Compton prize winners in the Class included (from left) Joseph Harrington, 3d, Robert Nagro, Jerome Grossman, and Peter Gray.

honored guests included Vannevar Bush, '16, Honorary Chairman of the Corporation; Malcolm G. Kispert, '44, Administrative Vice-chancellor, and Dr. Albert O. Seeler, Medical Director.

Doctoral candidates included Sherwood Fiske Brown, '23, a member of the Lowell Technological Institute's Faculty; James R. Slagle, '59, who has been totally blind since his first year in high school; and Lt. Michael Davis, a U. S. Naval Academy graduate who received a doctorate of science in Electrical Engineering and a master's degree in Naval Architecture, simultaneously.

Three members of the Class of 1961 were to leave shortly for West Africa as participants in the Cross-

(Concluded on page 58)



APPLAUSE greeted Dr. James R. Slagle, '57, accompanied (at left) by Dr. Bruce W. Shore, '60. The Investors of the Hood were Acting Dean Norton and Professor Hurley.

An Educational 'Marshall Plan'

BY FRANK STANTON

President of the Columbia Broadcasting System

LET me first congratulate all of you who are receiving degrees here this morning. Throughout the world, the Massachusetts Institute of Technology has an unsurpassed reputation for excellence created by a century of the highest distinction in training exceptional minds. As your impressive Centennial Convocation this spring demonstrated, you have won recognition in high places everywhere as serious, responsible people, willing to work hard in the pursuit of knowledge—a pursuit that has grown almost daily more intricate, even within the short years that you have been here. I salute you.

As initiates into the company of learned men and women, you will find that training in the disciplines of science gives you capacities that go far beyond the laboratory. I hope that it does no violence to your serene relationships up the Charles, if I cite the perceptive language of the Harvard Committee's report, *General Education in a Free Society*, which states: "... science is both the outcome and the source of the habit of forming objective, disinterested judgments based upon exact evidence. Such a habit is of particular value in the formation of citizens for a free society. It opposes to the arbitrariness of authority and 'first principles' the direct and continuing appeal to things as they are. Thus it develops the qualities of the free man."

"The formation of citizens for a free society" has been the substance and the major point of the American experience. Scientific excellence in itself—as we know only too well—can be achieved in authoritarian societies, where it becomes the master of men, even though it may ultimately go down under the weight of political tyranny. Only when scientific accomplishment is in league with freedom does it become an advantageous servant of man in his perpetual quest for self-fulfillment. It is significant that this republic had its beginnings in an age as hospitable to scientific inquiry as it was to political innovation.

IN ADDITION to heading CBS, Dr. Stanton is Chairman of the Board of the Rand Corporation, a trustee of the Rockefeller Foundation and the Center for Advanced Study in the Behavioral Sciences, and a director of the Lincoln Center for the Performing Arts in New York. He was introduced by Chairman James R. Killian, Jr.

America now has an historic opportunity to help the underdeveloped nations of the world educate their people and become enlightened democracies

The vision of democracy that was held by the men who launched the first great revolution in its name, and who constructed an incomparable constitution to give it practical expression, was shared by men everywhere in the Western world. It was an age of optimism, of confidence, in which there was a pressing democratic instinct even where there was not yet explicit democratic faith. The climate of the world was favorable to the democratic adventure.

And conditions in these colonies were no less favorable for the architects of our democracy. The times were relaxed. The country was small and homogeneous, and we spoke one language. We had roots of democratic thought and experiments transplanted here by our English forebears and going back over the centuries to the seeds germinated by Magna Charta. We were far removed from the rest of the world and its strifes, and relatively unmolested. And we had time to develop slowly the institutions upon which the success of any undertaking in self-government is bound to depend.

In spite of these healthful conditions surrounding our beginnings, there was a clear awareness among the founders of the nation that this democracy could not survive without an educated and informed people. Franklin, Adams, Madison, Jefferson—all noted the dependence of self-government in any effective form on general education.



Now, two centuries later, new nations are springing into being all over the world, hopefully groping toward democratic characters and destinies of their own. Two great continents, Asia and Africa, have seen in little more than a decade the launching on their own course of two score newly independent nations. In Latin America, old nations, imbued with a new spirit of self-determination, have thrown off the chains of old dogmas and old institutions to venture upon the hazardous trial and error of democracy. Upon the transition of all these nations into resolute, working democracies hangs the fate of the free world. Their success is the responsibility of the whole community of free nations and particularly, because of our strength and resources, of the United States.

What are the odds for these people in a world of violent contention: where everyone is on everyone else's doorstep; where events move so fast there is barely time to react, let alone to understand; where there is an at-

mosphere of suspicion and distrust and a history of pressures and interventions; where good people, freed from the burden of centuries, bravely set forth upon the most difficult of all governmental experiments with no foundation in democracy whatsoever?



In the hopeful climate of 200 years ago, our founders warned that, without education, we would fail. Is it safe—perhaps I should say is it not reckless—to assume that, in this agitated world, these new nations will survive without even minimal education? Or that they can take a century or two—as we did—to evolve their own institutions without help? Would it be going too far to suggest that it borders on criminal negligence that we here in this crucible of democracy have not given top priority to helping these new nations educate their people?

Since the end of World War II, the United States has spent some \$85 billion for foreign aid. Of this, \$12 billion went into the Marshall Plan, the greatest act of reconstruction in history. Since 1952, the vast bulk of the remaining \$73 billion has gone to military, mutual security, technical, and industrial purposes. Only an incidental trickle—split among a score of projects—has borne directly on education—which we ourselves have called the first prerequisite of a democratic society. One by one the emerging nations of Africa and Asia have said that education is their first concern. One by one they have given it the largest share of their limited revenues. And one by one they have seen us neglect to give to their educational development the same high priority we have given their economic and military development.

At the 23d International Conference on Public Education in Geneva last summer, four countries—Ethiopia, Ghana, India, and Pakistan—reported that English has been either adopted as an official language or made compulsory at some level in the schools. These nations represent a total population of some 500 million—one-sixth of the world's people. It is not difficult to imagine the energy and funds the Soviets would have poured into the teaching of their language to these people had Russian been chosen instead of English. Five hundred million people—and right now the United States is making instruction in English possible to less than one tenth of one per cent of that total in foreign lands all over the world.



Public libraries, which in our own national experience have been a vital component in the educational machinery, are a commonplace in the satellite countries and still a conspicuous rarity in most of the emerging free nations. Czechoslovakia has 14,431 public libraries; Cambodia has one. Hungary has 4,360; Ghana has 13. Rumania has 13,645; Pakistan has 59. Poland has 6,594; Korea has 16. The Communists have taken seriously the belief of Benjamin Franklin that public libraries contribute directly to the political awareness of the people.

I wonder whether at a pivotal point in history we are not walking into the trap of a bitter irony. In a

world where the democratic idea is on trial in more places, under more desperate conditions, than ever before, we are practicing economic determinism, when we know from every evidence of our own experience that the only road to democratic fulfillment is *educational* determinism.

There have been—and still are—practical material problems that we ought to help the new and developing nations solve. I am not sure that all of them are foremost problems. I know that the solutions that we advance in terms of technical aid are only stopgaps unless we help solve the larger problem of education. I know that military aid can become a powder keg in the hands of a people unless they are educated. I am sure that education is the neglected world frontier, the neglected world opportunity. As the world's leading democracy we ought to take a good hard look at our national policy on foreign aid and see if we are doing enough to prepare the emerging nations to be truly self-governing and self-sufficient.

Let us take a look at Asia, where 19 new nations have come into being since the end of the war. At a regional meeting of Asian member states of the United Nations Educational, Scientific and Cultural Organization, in Karachi, in 1960, it was found that there were some 87 million children in 15 countries who have no educational facilities whatsoever and that the other 65 million children go to crowded, inadequate schools for a few elementary grades. One of the most striking social facts of our time is the energy, the determination, the responsible sense of democratic purpose with which many of these countries have moved forward on this front, in spite of the huge dimensions of the need. But in Burma there is still compulsory free schooling only to the age of 11, and in Cambodia and Iran only to 12. And in Burma and Cambodia only 59 per cent, and in Iran, 38 per cent, of the children get even that. In 22 countries of Tropical Africa less than half the children go to even the first grade of primary schools—though some of these nations have tripled the number of their schools in less than a decade.

But the real waste of human resources and the short-selling of the democratic effort come in the secondary school bracket. Primary school can do little more than prepare one for the mechanics of living—the reading and writing and arithmetic necessary for ordinary daily transactions. Secondary school is the earliest level where education begins to involve the larger purposes relating to the ability to make distinctions, judgments and decisions that is the very essence of self-government. A people able to read but lacking the knowledge to assess their reading are far readier prospects for totalitarian propaganda than the wholly illiterate. Yet in Asia secondary school is a luxury for the few, running as low as 16 per cent of children of eligible age in Iran. And in the 22 countries of Tropical Africa, an average of only 5 per cent of the primary school children ever enter a secondary school, and in only four of the countries does the number going to secondary school exceed 7 per cent.

We know that these are not meaningless statistics. Events in the vastly different countries of the Congo

The photo shows Dr. Frank Stanton, as seen by the Class of '61, during M.I.T. commencement exercises on June 9.



and South Korea leave profoundly disturbing evidence that we have turned our backs on the lessons of our own history in hoping or expecting that democracy can take root anywhere without an educated people. In the Belgian Congo, a nation of 14 million, there were just 12,158 pupils in general secondary schools when it received its independence. There were only 549 college students—most of them in agricultural college. There were said to be a dozen university graduates.

Now, with our long heritage of starting free public schools and vigorous colleges long before we were independent and of founding schools at every stop as we spread across this continent, our land-grant program to make possible the establishment of great universities, our personal conviction that our first duty is the education of our children—with this background, how can we assume that if we give emerging nations guns and monkey wrenches, tanks and cement mixers, economic aid and technical assistance, they will become self-governing peoples and stay free?

☆☆☆

We find ourselves pushed into defensiveness by Russian ruthlessness because we have lost sight of our values in an effort to wage peace on their terms. We have overlooked the most important peacetime offensive that a democracy can make—a massive educational development program. We need to abandon the old hope that we can ever make the world safe for democracy by strengthening military and economic resources alone. South Korea, gripped today in a military dictatorship, bears unhappy witness to the tragedy of such shortsightedness. We need to make democracy safe for the world by so strengthening human resources that all men once blessed with the vision of freedom will be capable of its realization. We should remember the comment of Epictetus, who recalled the fall of Athenian democracy because only the few were educated: "The state says that only free men will be educated; God says only educated men will be free."

It may be that democracy will be irreparably damaged if the Russians get to the moon before us. It may be that it will be in permanent danger if another of their astronauts is put into orbit ahead of ours. I don't know. But of this I am absolutely certain: democracy cannot survive ignorance, superstition, credulousness, and all the awful uncertainty, the fatal incompetence and the harsh defensiveness of those who have neither knowledge nor understanding—for they will be easy and inevitable victims of aggression from without or corruption from within.

Only education—not manned flights to the moon, not new nuclear tests below the surface or in outer space, not webs of highways and patches of landing fields dotting half the planet—can ultimately prevent the sure collapse of a free nation unequal to its freedom.

This, it seems to me, is the historic opportunity of America in this second half of the Twentieth Century. This is the great new act of faith that America can announce to a world tired and discouraged with rivalries on terms dictated by Russian militarism and materialism.

But it cannot be met by multiplying the fragmented efforts already spread among a dozen agencies. It can-

not be met by foundations and universities which are already straining at the seams to support their great work of pilot projects and which have made an enormous contribution from their limited resources. It cannot be met without boldness, without specific commitment, without massive economic support.

The importance of international education development has long been in the air. It has been the subject of speeches and reports and resolutions. Let us now revert to the ancient duty of a democratic people and take the initiative as free citizens. Let us undertake, and be prepared to support, a great Marshall Plan of educational aid, a 10-year program amounting each year to perhaps a fifth of our current foreign aid commitment and replacing significant parts of it.

☆☆☆

Let us say to the President that we are ready to reaffirm our faith in the democratic ideal and ask of him his direct and personal leadership in marshaling the resources and the talents of this country in a powerful, unified effort at international educational development—not as an adjunct to something else but as the major contribution for the next decade of the world's strongest democracy to the survival of the free world.

Let us urge the Secretary of State that, as a matter of basic policy, we add to the familiar trio of implements expressing our foreign policy—diplomacy, military aid, and economic assistance—a great fourth arm, educational development.

Let us emphasize to the chairmen of the Senate Foreign Relations and the House Foreign Affairs Committees that, mindful of the great good of the student exchange program, as of other limited international educational projects, we believe now that we must no longer atomize, camouflage, and improvise in this field but create a mighty force to give free nations all over the world the only real chance they have for survival and growth—an educated people.

Let us invite other freedom-loving countries to join us in this effort both through increased support of UNESCO and the United Nations Special Fund, and through direct support of educational development in the emerging nations. But let us make it clear to the world that, with others or alone, we are intent upon helping those nations to become vigorous enlightened democracies.

As for ourselves—a nation of 110,000 primary schools, 30,000 secondary schools, 2,000 colleges and universities, and 70,000 libraries, a nation which recognized from its beginnings that education was our best hope, a nation which this month will confer a half a million academic degrees in scores of disciplines—let us not rest until we have helped the free peoples of the world become capable of the self-government for which they so nobly and hopefully yearn.

This great prospect will not bring you rest as you begin your careers today. But, as Justice Holmes said, repose is not the lot of man. You can have in your time the satisfaction of an affirmative response to the overwhelming realities of our world. And that is enough, for that is the great work facing your generation and remaining to mine, as we see to it that this troubled century makes its point in history.

The President's Charge To the Graduates

IN THE traditional charge given at M.I.T.'s commencement exercises this year, President Julius A. Stratton, '23, said in part:

YOUR GENERATION is about to assume its share of responsibility in a world that is torn and disrupted by conflicting forces. Every morning the newspaper headlines report the difficulties and dangers of our times. I want in no way to minimize the gravity of the economic, social, and military problems that are pressing us on every side. But for the peoples of this earth life has always been filled with risk and hardship. The whole history of human progress is one of triumph over obstacles. And it seems to me far more fitting that in my charge to you today, I should point out not the difficulties of the road ahead but the opportunities; not the misadventures of the moment but the goals for the future. I am convinced that man has never lived in an era of greater promise. And whether you are Americans or whether you come from lands abroad, as graduates of M.I.T., you are in a superb position to translate hopes into reality.

Surely to this audience the supreme importance of science and engineering in the advancement of modern society is abundantly clear. It should be equally clear that technical competence alone is not sufficient to meet the greatest crisis that faces the free world—the preservation of our democratic institutions.

The question is simply this: can a democracy in our tradition meet and survive the challenge of a highly competitive, highly organized central authority? The



Irving W. Wilson, '11, Chairman of the Finance Committee of the Aluminum Company of America, addressed the Class of 1961 at the luncheon which followed commencement exercises. He contrasted the world of today with the world 50 years ago and, like President Stratton, urged the graduates to take part in community affairs.

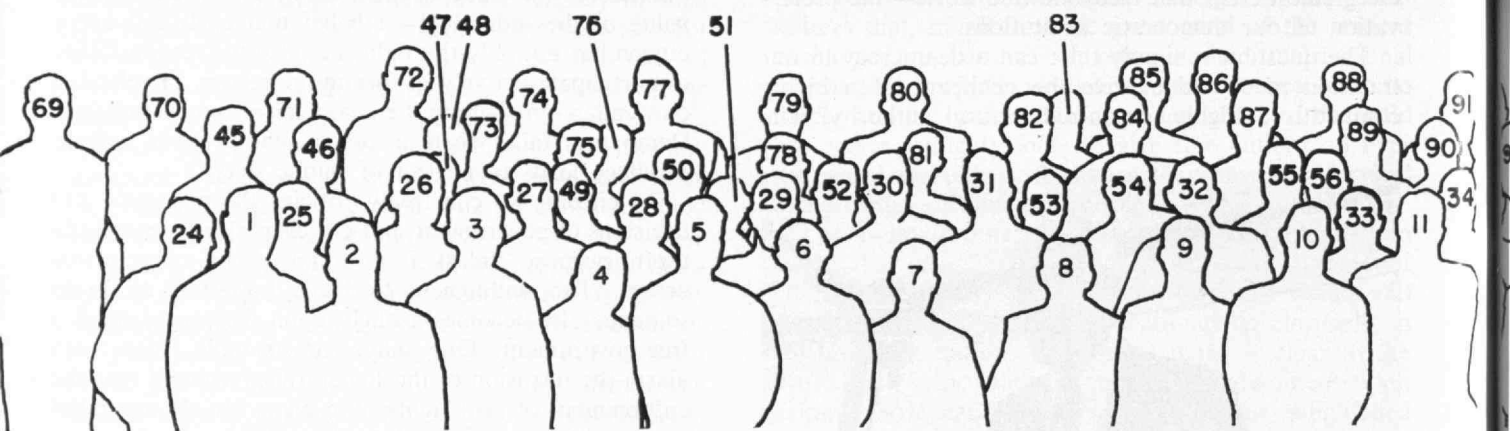


Corporation Chairman James R. Killian, Jr., '26 (left), presided at the commencement exercises, and President Stratton presented the degrees. Both greeted the families and friends of the graduates later in the Great Court.

essence of our kind of democracy is a belief in the value of the individual—a belief that each and every citizen has not only the right, but also the responsibility to participate actively in forming our laws, in selecting our leaders, in shaping the character of our institutions. Democracy fails when a preoccupation with private privilege leads to neglect of public duty.

As citizens we can freely criticize the processes and decisions of government; but criticism alone serves little useful purpose unless it is followed by constructive action. The willingness to leave important affairs to someone else becomes a blight upon the processes of a free government. One may, for example, view with alarm the intrusion of the Federal Government into the enforcement of civil rights, into plans for old age relief and medical assistance, into the subsidy of education. But we should ask ourselves honestly to what extent this has come about because of a failure first to come to grips with such problems in the local communities.

Democracy gathers its force from the grass roots. Civic virtue, in short, begins at home. It starts humbly and in small affairs. It involves everyone. It begins with you who today are graduates of M.I.T. If you want better schools, better government in your town, a city of which you can be proud, then give something of your own time and thought to solving the problems of a working democracy. You who go out today as architects and engineers, as scientists and economists, are in a most favored position to make substantial contributions to the local, to the state, and to the national interest. I am confident that you will accept this responsibility with zeal, and discharge it with credit to yourselves and to M.I.T.



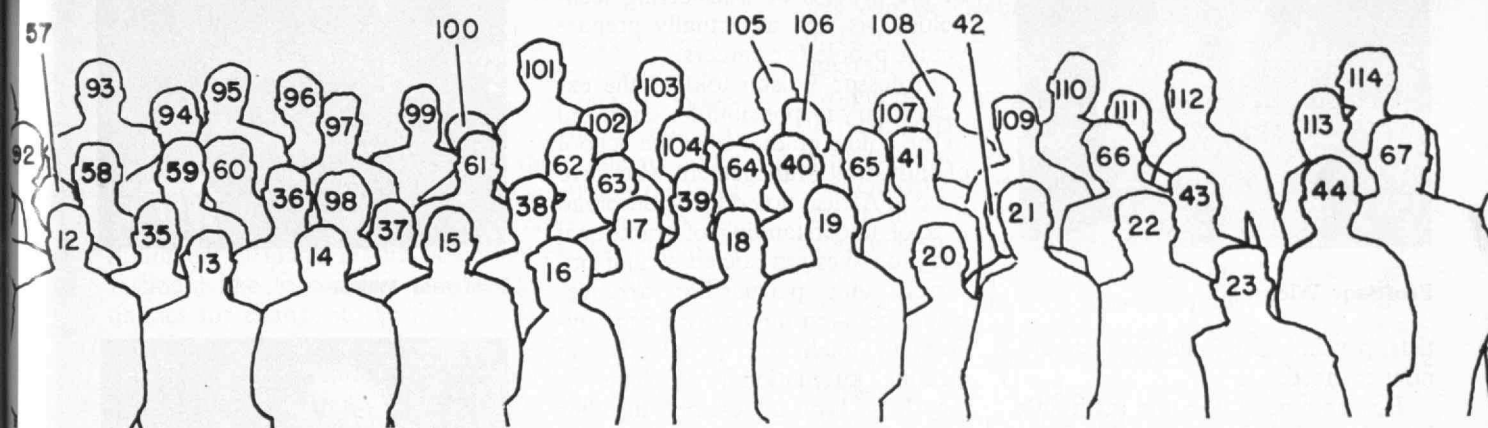
International Conferees on Scientific and Engineering Education

THE INSTITUTE was host, during the observance of its Centennial, to an International Conference on Scientific and Engineering Education, which brought to the campus scores of the world's leading scholars and educators, some of whom are pictured above.

The conferees divided after this photo was taken into four groups to discuss (1) the problems of scientific and engineering education in newly developing countries, (2) the same problems in countries with more advanced technologies, (3) the interactions of science, engineering, and society, and (4) the implications of science and engineering for international relations.

The meetings continued for four days, and the discussions were summarized for the public by four members of the M.I.T. Faculty at the first general assembly on Centennial weekend.

1 George B. Kistiakowsky, 2 Dean Howard W. Johnson, 3 Norman C. Dahl, 4 Paulino J. Garcia, 5 Jaime H. de Sola, 6 Muhammed Qudrat-I-Khuda, 7 Issac Koga, 8 Isidor I. Rabi, 9 Walter G. Whitman, 10 Jerome B. Wiesner, 11 James R. Killian, Jr., 12 President Julius A. Stratton, 13 Jaime Benitez, 14 Nabor F. Carrillo, 15 Alexander Rich, 16 Salwa C. Nassar, 17 Sir Solly Zuckerman, 18 Shukri H. Shammas, 19 Charles H. Malik, 20 Rolando Garcia, 21 Hon. R. G. Casey, 22 Turhan Feyzioglu, 23 Mustafa Santur, 24 Karl M. Koch, 25 Arnold J. Zurcher, 26 Sanborn C. Brown, 27 Gerald Holton, 28 Ritchie Calder, 29



Erkki Laurila, 30 Francois de Rose, 31 James McCormack, 32 Luther H. Evans, 33 Shmuel Sambursky, 34 Maneklal S. Thacker, 35 Eugene Rabinowitch, 36 Jonas Salk, 37 Hans Thirring, 38 Manuel S. Vallarta, 39 R. E. Peierls, 40 Sir Eric Ashby, 41 Lawrence S. Finkelstein, 42 Salimuzzaman Siddiqui, 43 Brock Chisholm, 44 Walter Rosenblith, 45 Dean George R. Harrison, 46 Patrick M. Hurley, 47 W. Arthur Lewis, 48 Edwin R. Gilliland, 49 Davidson Nicol, 50 Charles E. Wyzanski, Jr., 51 D. S. Kothari, 52 Everett E. Hagen, 53 John F. Baker, 54 Ascher H. Shapiro, 55 Harry Hookway, 56 Morris Cohen, 57 Homi J. Bhabha, 58 Raymond C. F. Aron, 59 Lloyd V. Berkner, 60 Piero Caldirola, 61 Jeffrey I. Steinfeld, 62 Sir John Cockcroft, 63 Dean Harold L. Hazen, 64 Francis Bitter, 65 Nevin Scrimshaw, 66 Paul F. Chenea, 67 Hilliard Roderick, 68 Abdul J. Abdullah, 69 Rt. Hon. Philip Noel-Baker, 70 A. Singer,

71 Elting E. Morison, 72 Carroll L. Wilson, 73 Carl W. Borgmann, 74 Robert S. Morison, 75 Gordon S. Brown, 76 P. Winkel, 77 Max F. Millikan, 78 H. Opitz, 79 Sydney Chapman, 80 Roy Lamson, 81 Charles S. Draper, 82 C. Richard Soderberg, 83 Louis D. Smullin, 84 P. M. S. Blackett, 85 Ithiel D. Pool, 86 Alexander G. Korol, 87 Norman F. Ramsey, 88 Arthur Roe, 89 E. Skolnikoff, 90 Sir Willis Jackson, 91 Albert G. Hill, 92 Wolfgang Gentner, 93 Dean John E. Burchard, 94 Aldous Huxley, 95 Douglas M. McGregor, 96 John C. Sheehan, 97 Peter Elias, 98 Jane Drew, 99 Nils Gralen, 100 Amos de Shalit, 101 Lucian W. Pye, 102 Francis E. Low, 103 Bryan Coleby, 104 Lawrence S. Kubie, 105 Abraham Kaplan, 106 Peter R. Bankson, 107 David N. Ness, 108 August Rucker, 109 H. Guyford Stever, 110 Adam Schaff, 111 Irwin W. Sizer, 112 Roman Jakobson, 113 J. Hendrik Bannier, 114 E. Knuth-Winterfeldt.

The Universities' Role in World Affairs

THROUGHOUT the commencement weekend at M.I.T.—as during the Centennial celebration—the world's educational needs were stressed. President Julius A. Stratton, '23, in his report to Alumni at their luncheon in the Great Court, spoke of the increasing interest in the social sciences at the Institute; and in the symposium that followed in Kresge Auditorium, four noted members of the Faculty discussed "The University in World Affairs."

Dr. Stratton, after recalling the origins and growth of M.I.T., called attention to the interdisciplinary character of much of the work in which economists, political sci-

Assistant to the President for Science and Technology; Carroll L. Wilson, '32, Director of the M.I.T. "Fellows in Africa" program; and Max F. Millikan, Director of the Center for International Studies.

Education is a major aspiration of the two-thirds of the world's people in the emerging nations, Professor Millikan declared in opening this discussion. The bottleneck to their achievement of their goals, he continued, is the lead time needed to increase their human resources—and this is a problem, he suggested, which presents great opportunities and challenges to our universities. They can help develop the new educational techniques that are needed and help improve our understanding of the process of transferring technology, as well as actually prepare young people for careers.

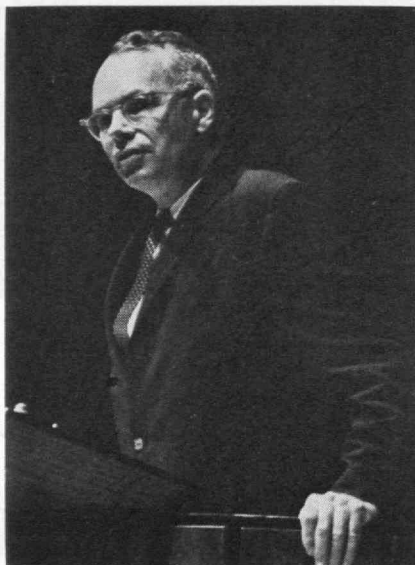
Professor Wilson told of the extraordinary responsibilities entrusted to the young graduates of the School of Industrial Management who have gone to Africa; noted the widespread lack of understanding of traditional and non-Western societies, and observed that partnership arrangements between universities and government might be as effective in meeting international problems as they have been in research in other fields.

Professor Wiesner saw analogies between the requirements of underdeveloped industries in this country and those of the undeveloped nations. He called attention, too, to the new environmental hazards to life and the interdisciplinary research required to meet them; and pointed out that to maintain our own country's rate of growth we must double the output of scientists and engineers.

"Our generation," he said, "is trying to bring the gifts of civilization to all mankind, and this is a hard job. In many fields, we need more basic research."



Professor Whitman



Professor Wilson



Professor Millikan



Professor Wiesner

tists, psychologists, and linguists are now engaged.

He announced, too, the Institute's intention of allying itself with other American universities in order to help establish a technological university in India. This, Robert C. Cowen, '49, wrote in *The Christian Science Monitor* the next day, provided "a moment of quiet drama" for the Alumni and their guests because once again their Institute was about to play an important role "in meeting one of the foremost scientific and educational challenges of the times."

Professor Walter G. Whitman, '17, Scientific Adviser to the Secretary of State, led the symposium discussion and the panelists were: Professors Jerome B. Wiesner, Special

And Inner Commitment

Ordering Principles in the Affairs of Molecules and Men

BY FRANCIS O. SCHMITT
Institute Professor

IT IS POSSIBLE to believe that all the past is but the beginning of a beginning. . . . It is possible to believe that all that the human mind has ever accomplished is but the dream before the awakening. . . . All this world is heavy with the promise of greater things, and a day will come, one day in the unending succession of days, when beings, beings who are now latent in our thoughts and hidden in our loins, shall stand upon this earth as one stands upon a footstool, and shall laugh and reach out their hands amidst the stars. So prophesied H. G. Wells in his discourse "The Discovery of the Future"¹ delivered at the Royal Institution in 1902. Wells could hardly have guessed that astronauts would have penetrated outer space and that man might be able to beam light signals to the stars still within his own century.

The life sciences have unveiled new vistas of knowledge about life and about man, his origin and status. Because man has learned to manipulate factors importantly influencing not only his physical health but also his mental and spiritual well being, the problems posed by advances in the life sciences may constitute the most crucial salient in the battle for survival and for the fulfillment of man's inborn potentialities. As a biologist I should like to consider the changes and the potentialities for change in the field of the life sciences and to attempt to give a realistic notion of the dynamics of change and its impact on man and his affairs. The last hundred years are regarded as "the Century of Physics"; the next may well be called "the Century of the Life Sciences."

The present era may be but the flowering of what history will call the 20th Century Classical Period in the life sciences. Will this be followed by revolutionary conceptual advances comparable with those of the three decades from 1895 to 1925 that shook the foundations of physics? No comprehensive fabric of theoretical biology now exists. If one were to hazard a guess, one might suggest that the development of a theoretical biology would have one of its sources in a study of the physico-chemical processes that underlie psychological phenomena.

The Acceleration of Evolutionary Change

Before we try to envision the developments now in the making, we must comprehend the acceleration of evolutionary change.

A time-lapse caricature² of evolution is illuminating. Suppose the earth's age to be five billion years. Compress that span to one calendar year. Earth's birthday would then be January 1. Giant organic molecules (which I shall hereafter call "macromolecules") capable of self-reproduction appeared perhaps in February. Living cells with their microcosmic patterns of macromolecules did not arrive until early April. Multicellular invertebrates with their federations of specially differentiated sovereign cells came in the late spring of our planet, about May. Brainy mammals arrived in October, primates in November, and man walking upright not before 8 P.M. on December 31. Recorded history began in the last minute of the year. Science as we know it is only two seconds old—this year we celebrate the quadricentennial of the birth of Francis Bacon, the founder of the modern scientific method. In that last "minute" of recorded history little evolutionary change has occurred in man's body, but, through conscious use of his intelligence and his ability to order and communicate his thoughts in spoken and written symbols in a methodologically disciplined manner, man is beginning to achieve some control of his environment; most importantly, he is evolving new patterns of mechanical and biological information processing that may lead to a true evolutionary discontinuity.

Though there is yet no actual evidence in its support, the not unreasonable suggestion that sentient beings far surpassing man in scientific ability may exist on the planets of innumerable stars has greatly extended the perspective of evolution. Man may be somewhere near the middle—not at the top! It is a sobering thought that if a civilization on a planet of another star would have progressed to a point only 50 years beyond our level of development on planet Earth—a mere fraction of a "second" in the compressed year of the universe—the scientific advances thus attained might well prevent intelligible intercommunication between that planet and Earth.

Some Major Contributions of Life Sciences to Human Progress

The explosive changes wrought by "Father Chronos" through evolution have enormously increased man's potentialities. Their realization may further man's progress—or end it.

1. Wells, H. G., "The Discovery of the Future," *Nature*, 65:326 (1902).

2. Adapted from G. M. McKinley's *Evolution: The Ages and Tomorrow* (New York: The Ronald Press Company, 1956).

Biologists of my generation have dealt effectively with two major problems: 1) the search for physical and mental health and the conquest of disease and aging; 2) the search for an understanding of the biochemical foundations of life. We are now beginning a third: the search for the physical basis of mind.

Man's physical condition has been vastly improved through biomedical research. The financial investment in this research has yielded truly gratifying returns in human betterment. The unraveling of the complex maze of reactions by which the organism converts food into available energy and couples this energy with the molecular machinery to subserve the cell's function and to biosynthesize the machinery itself is a magnificent chapter involving quite a few Nobel Prizes! Through advances in nutrition, near-elimination of infectious diseases by antibiotics, increasingly effective assault on degenerative diseases such as cancer, cardiovascular and rheumatoid diseases, and through concerted investigation of mental illness and the process of aging itself, biomedical research has greatly relieved human ills. Life expectancy has been extended 6.4 years in the last 16 years, from about 63 to 70 years.³

The Search for the Physical Basis of Life

Only a few decades ago the dogma that the cell is the indivisible unit of life was still prevalent. With the development of light microscopy 19th Century biologists had sought to visualize units of life *within* cells. However, electron microscopists and molecular biologists have now shown that we must seek these units at a still higher level of resolution, that is, at a lower level of size, in fact, at the level of the macromolecule.

Indeed, the discovery of the biological role of macromolecules may exceed in importance the discovery of the role of cells more than a century ago. Modern biophysics and biochemistry have focused the problem of the physical basis of life in the properties of complex macromolecules. It is now a familiar story that the thread-like, helically coiled nucleic-acid macromolecules carry the linear genetic code in chromosomes and viruses. The genetic language is written in linear sequence with a four-letter chemical alphabet, providing a diversity of combinations which far outnumber all the atomic particles in the known universe! This near-infinite diversity of properties meets the specificity requirements for living entities and is capable of constituting the code of hereditary directions for making an organism in the image of its forebears. This diversity also meets the requirements for synthesizing vital biomolecules in the cell, including those which provide permanent immunological protection against disease and which therefore constitute, as it were, the chemical memory of the body, just as the nucleic acid constitutes the molecular memory of the race. Since viruses and micro-organisms depend on nucleic acids for replication, this type of macromolecule is also the molecular basis of infection.

To grasp the conceptual and experimental significance of the macromolecule in genetics, recall the avalanche of progress that followed the chemical and biophysical characterization of nucleic acids and the elucidation of the role of these macromolecules in gen-

etics as compared with the snail's-pace progress when the level of investigation was the cell or the whole organism.

The Search for the Physical Basis of Mind

The demonstration of the macromolecular basis of heredity suggests a clue to the study of mental processes. The analysis of brain function in terms of the structural and functional unit, the neuron, and of the indescribably complex neuronal circuitry, has harvested a rich understanding of sensory and motor phenomena and of the neural integration of bodily functions. But, despite the tireless work of many brilliant investigators, nothing is yet known about the way neuronal networks, however complex, might account for learning processes and cognitive awareness or even for only one of their components—memory.

As success was achieved by looking *within* the cell for the biochemical code of heredity, macromolecular nucleic acid, so by looking *within* cells of the brain we may hope to find a physical basis for certain brain functions, like memory, not obviously subserved by digital, impulse-propagated signal transmission of neurons and their nets. In embryogenesis the unbelievably complex three-dimensional network which is the brain is woven by cells whose temporally and spatially patterned maneuvers could be explicable, I believe only in terms of directions provided by a macromolecular code.

Similarly the near infinite diversity required for transduction from sensory input, storage, and recall of the accumulated experiences of a lifetime cannot be fully subserved by mechanisms at the level of cells. More probably we must look to macromolecular systems for specificity of transduction in both imprinting and readout.

Though it is possible to propose reasonable mechanisms for the generation or selection of macromolecular equivalents of sensory information brought via electrical inputs over neurons, no mechanism is yet obvious for the fast recall, or readout, characteristic of cognitive processes. Even in molecular genetics almost nothing is known about readout. Hints may turn up when the properties emerging from the detailed patterning of macromolecular assemblies are discovered. Microminiaturization is now technically possible at the submillimeter level with man-made electronic components, and revolutionary new computers are contemplated at the colloidal, submicron level of components. The molecular components and circuitry of living cells are doubtless far more sophisticated. I suggest that specific solid-state assemblies of patterned macromolecules, existing in cell structures, interacting by quantum chemical fast transfer of energy and of elementary charged particles, may underlie certain mental processes.

An outgrowth of studies of mental biophysics may be a revolutionary improvement in human communications. The value of multidisciplinary research centers is already well established; five such centers are planned for M.I.T. The success of these groups may depend on factors more fundamental than the mere opportunity to share elaborate equipment and common research goals.

In his Penrose Lecture before the American Philo-

3. *Facts on Major Killing and Crippling Diseases in the United States Today*, published by National Health Education Committee, Inc., New York City, 1961.

sophical Society⁴, Dr. Vannevar Bush [16] predicted that new methods of science will involve "new ways of storing and consulting the record . . . to interrelate the thought patterns of allied minds with far more intimacy than is now furnished by books, lectures or seminars."

To communicate with his fellows, man now transduces his thoughts to spoken or written symbols. These are reasonably satisfactory for simple messages, but inadequate for conveying complex conceptual ideas, human emotion, and spirit. Will biophysical research on mind pave the way for bypassing sensory mechanisms? It may not be unreasonable to imagine that this might eventually occur, perhaps at first requiring instrumental prosthetic aids. Pooling the diversity of individuals' learning and endowments by such interpersonal communication could inaugurate a new hierarchy of intelligence and a new kind of science. Other implications of human interthinking as a new advance in evolution have been projected by Teilhard de Chardin⁵ and by other speculative thinkers.

All advances in our understanding of mental processes, as of other natural phenomena, are made through science, and therefore do not directly touch the ontological problem of the nature of the inner self. Implied here is no attempt by research or sheer intellectual genius to grasp reality by its quantized forelock, no suggestion that man's mind is no more than a quantum mechanical automaton. On the contrary, even such revolutionary discoveries as are here projected would still be science, therefore susceptible, like all scientific endeavor, to beneficent application—but also to ultimate desecration!

There are indeed overtones of urgency. Will the science establishment of the free world recognize the opportunities opening up in biophysical research on brain action in time to permit planning wisely and without undue stress from external eventualities?

New Dimensions of Danger and Responsibility

With knowledge through science comes the ability to control and conquer. The assault on malnutrition, disease, and the degenerative processes of aging has increased the life span, but resultantly is creating a population explosion that will present ethical problems of the first magnitude.

Knowledge of atomic physics leads to the possibility of liberation and control of enormous energy for peaceful purposes, but stockpiling threatens the use of weapons by men to control and conquer other men.

Knowledge of mental biophysics and biochemistry may be expected to lead to new understanding of the mechanisms underlying man's conscious, cognitive processes of learning and may lead to a new hierarchy of intelligence. Such knowledge could be used by men for the conquest and control of other men's minds. This could be the most frightful prospect of all, a living hell far worse than annihilation.

The Materialism-Idealism Dichotomy

In this age of fast-moving science and technology—an age that may be of evolutionary significance as a transi-

tional period—it is important that the structure of our civilization be safeguarded by standards of value judgment that are adequate to present and future needs. A fundamental dichotomy of life philosophy now divides mankind into two major groups: materialists and idealists. Representation of both views is found in all communities, though only the East gives political and creedal importance to the choice.

Benign and Malignant Materialism

The concept that the universe is mechanistic, devoid of meaning and value beyond that which can be studied by science, is as old as human thought. The fallacy of the materialistic interpretation is pointed out by Dr. Bush⁴:

We [would] find ourselves in a mechanistic universe, riding on a fragment from a primeval explosion, projected into nothingness, destined to plunge through space for a while, and then to cool to utter inertness. On this fragment evolution has occurred, an entirely mechanistic evolution from the chance appearance of reproducing molecules, through a myriad of species, sorted out by natural selection, to the appearance of man. Now man, the highest animal, is destined to ride for a while and then perish. There may be millions of other fragments, with organic life on them, sentient beings, conscious of their presence in a role not of their own choosing, riding also to their deaths. . . . But from this presentation of the mechanistic universe some recent writers have gone on to formulate a code of ethics as though it followed in logical consequence. . . . Man controls his destiny; let him so control it as to build for himself a better life. . . . The code is laudable enough as far as it goes; but it is incomplete and without a logical base in the facts from which it purports to be derived.

In its best form this modern benign humanism is dedicated to the improvement of man's lot and is considered by some as an intellectually satisfying religion. In its most malignant form this homocentricity—a reaction to theocentricity—has led to dictatorship and domination, metastatic and infectious. Dialectical materialism of the Soviet brand is militant and presses its claim on all phases of its society including scientists. An example from my own field may be cited. In the Soviet journal *Biofizika* the following statement appeared recently in an editorial which in its English translation⁶ under the title "Problems Facing This Journal During the Seven Year Plan" reads:

Current biophysics puts before us a fascinating problem—to penetrate into the physicochemical foundations of vital phenomena and to understand, by use of the methodology of dialectical materialism, the material bases of biological processes—and it is a discipline of great significance for the formulation of a materialistic world-outlook. *Biophysics*, in publishing reports of experimental science, discussing in its pages the basic problems of biophysical theory, and subjecting to critical review individual monographs and proceedings of scientific conferences, symposia, and congresses, will promote the strengthening of true dialectical-materialistic views of nature, and will expose the characteristic errors and falsities of idealistic and theological commentaries.

(Continued on page 70)

4. Bush, V., "Scientific Motivation," *Proceedings American Philosophical Society*, 98:225-232 (1954).

5. Teilhard de Chardin, P., *The Phenomenon of Man* (New York: Harper and Brothers, 1959).

6. *Biophysics*, 4:1-3, No. 5 (1959).

Future Men and Machines

Large electronic computers now challenge both their designers and their users to find wise uses for their speed and capacity

A Report on Centennial Talks at M.I.T.

A SERIES of lectures on "Management and the Computers of the Future" was an outstanding feature of M.I.T.'s Centennial Year. The Review published short reports on the first four lectures in its May issue; reports on the others follow. All eight lectures will appear in book form later.

Will Social Decisions Be Made Less Openly?

SIR CHARLES PERCY SNOW asked two apprehensive questions in the fifth lecture of M.I.T.'s Centennial series dealing with computers:

1) Will major social decisions be made by smaller circles of people as a result of the use of computers?

2) Will there not be grave mistakes when computers pass into the hands of people with poor judgment?

Most of our society's open decisions, Sir Charles argued, are the product of many peoples' minds and result from a kind of Brownian motion. An example is the desire for more rigorous elementary and high school education in this country now. The more decisions are made in this way, Sir Charles thinks, "the healthier and saner the society is likely to be."

But some decisions such as those about radar and strategic bombing that Sir Charles described in his book *Science and Government* are made by small, closed circles. The only advantage he sees in this process is speed. In addition to the possibility of errors of judgment, closed decision-making has the disadvantage of leading many people to feel indifferent. This is part, and perhaps an important part, Sir Charles

suggested, of "the despondency of our time."

"The computer circle," he thinks, "is going to be smaller than any scientific circle of decision-making we have so far known. It is going to take a major effort to make all scientific administrators computer-literate. It is going to be quite impossible within foreseeable time to make nonscientific administrators computer-literate."

As an experiment, Sir Charles suggested that a computer be programmed to decide the strategic bombing question that arose during World War II. The facts available in 1942 can be recovered, he pointed out, and it might be possible to see what would have happened then if computers had been available. This might, he opined, be a case where with a little imagination we could learn something from history.

Sir Charles has warned repeatedly against permitting decisions to be made by men fascinated by a particular gadget or tactic, and he fears that the computer "can assume the fascination of a gadget."

Our problem now, he concluded, is how to restore the widely based individual human judgment. "I am sure it can be done," he said. "We have had worse problems than this. But it is vital that we be thinking about it."

Professor Elting Morison, in commenting on Sir Charles's remarks, noted that men have learned to live with machines "at least as well and probably a good deal better than they have learned to live with each other," and expressed doubt whether computers will necessarily require more closed decision-making. The danger that he stressed is that

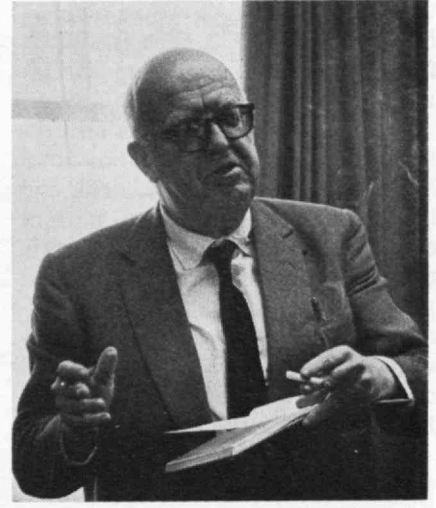
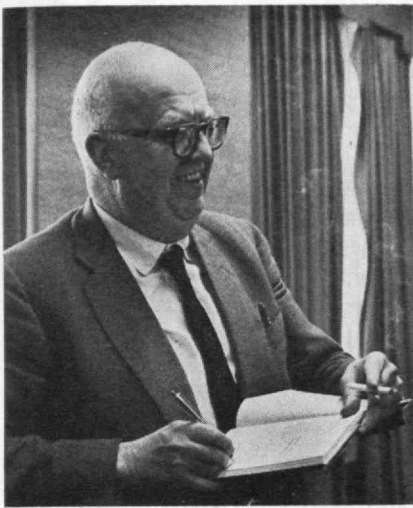
quantifiable data will obscure qualitative factors.

Professor Norbert Wiener, the other discussant on this occasion, stressed still another danger. It is that the use of secrecy and machines will be motivated by a desire to avoid responsibility and a feeling of guilt after decisions are made.

Can Computers Be Used More Efficiently?

IN THE sixth lecture of the series, Professor George W. Brown of the University of California at Los Angeles dealt with programming problems. To use the equipment in large, complex systems efficiently, he predicted, programmers will have to let the sequence in which many operations are performed be determined automatically within the system. His address was more technical than those which had preceded it, and dealt particularly with the "levels of language" used in programming machines. Programming now, he said, still shows vestigial traces of methods necessary in the early stages of computer development. "In the face of present capabilities and future prospects," he said, "programs conceived for machines which do only one thing at a time, step by step, make it impossible to get efficient equipment utilization."

"One has only to observe a few minutes of operation of today's large computing systems to notice that most of the time few magnetic tapes will be in operation, while there may be frequent intervals in which the arithmetic unit is idle, waiting for tapes to rewind, or some other operation to take place. In an ab-



Although Sir Charles Percy Snow viewed computers with alarm, a request to autograph a copy of his book brought a big grin.

solute sense, it does not appear that anything like reasonable efficiency is attained. The more complex the system is, the more striking is the phenomenon."

Professor Brown suggested that the solution will be an "executive program" which will interpret an upper-level language into a lower-level language and so direct the machine's operation that it will work efficiently on several different problems at once.

In the discussion, Grace M. Hopper, chief engineer—research programming, Sperry Rand Corporation, emphasized that one of the chief programming problems lay in the different kinds of data that have to be described. David Sayre, Director of Programming for International Business Machines Corporation, pointed up the scope of programming questions by noting that 300 million computer "words" are now being programmed annually.

Will Central Computers Serve Many Clients?

CENTRAL computing firms, receiving input data and transmitting results of calculations over telephone lines, were foreseen by Associate Professor John McCarthy of the M.I.T. Department of Electrical Engineering. Such new public utilities, he predicted in the seventh lecture of the series, will be organized before long to supply management with weather, economic, and other forecasts.

His lecture dealt with an imminent step in this direction, the de-

velopment of means to permit many persons to use a single large computer simultaneously. "The new applications that time-sharing will permit will be of as much additional benefit to science and to management," he said, "as the introduction of the stored digital computer in the first place."

When electronic computers were new, he recalled, they were used mainly for such time-consuming tasks as preparing mathematical tables, and few interactions between a man and the machine were necessary. Computers still are given many long runs, but they now are being used increasingly for tasks that they can execute in milliseconds. Such usage results in more frequent pauses for the user to think or make a correction before the machine can proceed.

At M.I.T. the use of large computers is now shared in two ways: a person working with the TX-O, for example, has exclusive access to it at certain times, and the machine often is idle while he makes corrections or changes in his program. The IBM 709 in the Computation Center, on the other hand, is never kept waiting. Its users submit their requests on punched cards, and problems are run in batches. The machine is thus used efficiently, but an individual working with this machine often must wait a day or so for its reply. Neither system is satisfactory to the programmers.

A better arrangement, which Professor McCarthy described, would be to have a series of consoles, from each one of which a person could communicate directly

with a large computer whenever he wished. This would facilitate symbolic calculation especially. It would help enable the computer to function as a teaching machine. It could be a step toward machine searching of literature. And a computer could then be directly coupled with laboratory apparatus.

After pointing out these advantages, Professor McCarthy discussed the difficulties—the storage requirements, the languages involved in communicating with computers, and the hardware needed.

A set of consoles connected to a large central computer might be simply a set of electric typewriters. These could serve as both input and output devices. Professor McCarthy has calculated that an IBM 7090, for example, could deal with messages from 3,000 typewriters, each going at a rate of five characters per second. If orders reached the computer from several typewriters simultaneously, a queue might be formed and, if needed, a priority system established.

It is also possible, he continued, to have a cathode-ray tube as well as an electric typewriter in each console. A person can then communicate with the computer by drawing on the tube with a light pen, and the machine can reply by producing pictures and text on the tube. This service can be provided to a single user now by the TX-O computer.

Next January an IBM 7090 is to be installed at M.I.T., and a pilot-scale project to equip it with time-sharing remote consoles is under way in the M.I.T. Computation

Center under the direction of Herbert M. Teager, '52. The Institute's future needs also are being considered by a Long-Range Study Group.

One of the commentators on Professor McCarthy's lecture was John Mauchly, a pioneer in the field, and he mentioned two other current challenges: one is to give computers the facility to place and answer telephone calls, and the other is to enable teaching machines to learn as well as to teach. Gene M. Amdahl of IBM was the other discussant and Emanuel R. Piore of IBM presided.

Will Men Learn What Computers Should Do?

WISE USE of computers will call for human brains of the highest order, John R. Pierce, Director of Research in Communications Principles at the Bell Telephone Laboratories, declared in the final lecture.

"Just because a computer *can* do something a man might do doesn't mean that it should," he said. "Amid the hullabaloo of enthusiastic aspirations and sales talk, management must find out what sorts of things computers *should* do for it.

"What computers should do depends not only on the computer and the problem, but on the ingenuity of the programmer. Ingenious programming can make computers useful for special purposes with no programming background.

"While machines can process data, the results are no better than



Professor John McCarthy of M.I.T.

the data, and information may be lost in the processing. While machines can process the results of surveys, it takes good social scientists to plan a survey, and a good statistician to evaluate the results.

"An information retrieval system can succeed only if it is operable and economical. It takes a great deal of expert knowledge to work out and to evaluate even the machine side of such a system.

"Further, all sorts of systems considerations arise in connection with any large-scale use of computers, considerations having to do with

dispersal as opposed to centralization, with electrical communication, and with enabling the over-all computer installation to cope efficiently with a variety of large and small problems.

"Management is management, but machines aren't men. Somehow, management must learn the management of computers. This may not be easy, especially in large organizations."

Vannevar Bush, '16, Honorary Chairman of the M.I.T. Corporation, presided at the final lecture and the discussants afterwards were Professors Claude E. Shannon, '40, and Walter A. Rosenblith of M.I.T.

Professor Shannon agreed with Dr. Pierce that "one should never send a machine to do a man's job." The detailed circuitry of a human brain, he observed, appears to be random and unstructured, whereas each connection in a computer is made very precisely. Computers, he observed, too, are either analogue or digital, but the representation of data in the brain is neither analogue nor digital.

Professor Rosenblith said that the real challenge may be to combine the computer and the human brain and "thus transcend what either can do alone." He referred to this as possibly "a form of evolution which takes place outside the body."

A School of Industrial Management committee, headed by Professor Martin Greenberger, arranged this series of lectures with the help of a grant from the International Business Machines Corporation.

First Automatic Machine Tool Leaves the Institute

THIS SPRING'S retirees from M.I.T. included the numerically controlled milling machine in the Electronic Systems Laboratory. Built only a decade ago, this machine gave some of the first demonstrations of what could be done on a factory floor with properly punched tape. As a spectacular part of the former Servomechanisms Laboratory, it produced a great variety of things, ranging from hyperbolic paraboloid ash trays to complex parts for aircraft, figured importantly in many students' theses, and drew visitors to the Institute from the whole world.

"The performance of this M.I.T. model," the *Scientific American* said in 1952, "shows that fully automatic machine tools are not only possible but are certain to be developed in practical form."

The milling machine fulfilled that prediction spectacularly. It carried out instructions from Whirlwind I in the early 1950's, and later received them from the

IBM 704 in the M.I.T. Computation Center. With its help, the APT (Automatically Programmed Tool) Systems now extensively used in the aircraft industry were developed and demonstrated.

Now the Electronic Systems Laboratory is studying the possibility of making computers active partners of designers. Working with the Design and Graphics Division of the Department of Mechanical Engineering, the laboratory's staff is investigating ways of enabling a computer to accept and analyze a designer's sketches in order to relieve him of much of the tedious calculating that his work entails.

For this step in the industrial revolution which the milling machine helped to accelerate, it is not needed. So, like Whirlwind and the 704, it is being removed. Auctioned by the Air Force, the basic tool will be refitted for industrial use, and the electronic parts used by a private individual in Washington, D. C.

Science and Society

What the nervous system is to the individual, the ability to acquire knowledge by scientific observation and employ it wisely is to the race

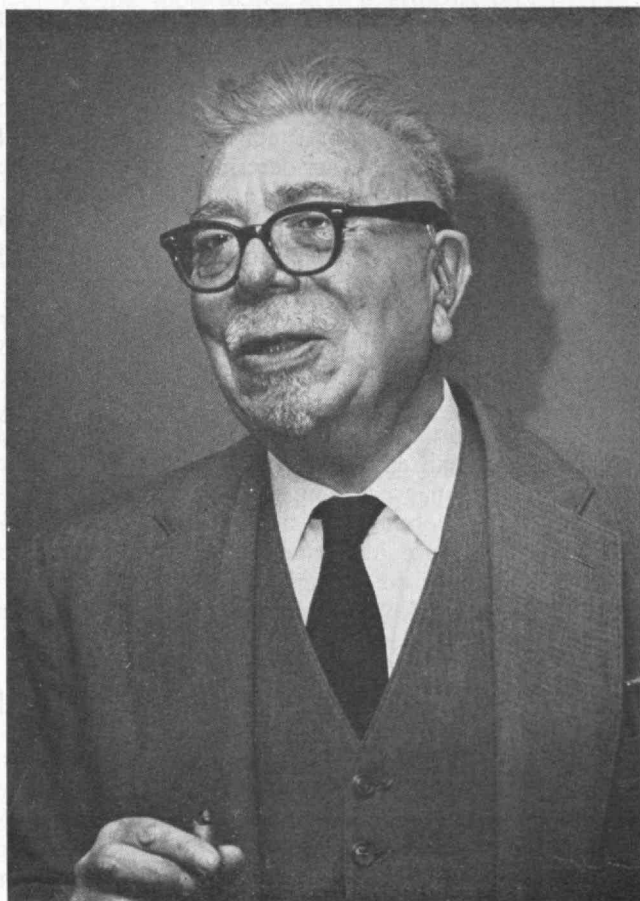
BY NORBERT WIENER

I DO NOT pretend to omniscience, least of all with respect to the general purposes of man and of society. The temptation to claim such omniscience is a professional temptation particularly belonging to those who call themselves philosophers. This includes the temptation to form a closed system of thought at the beginning, and then to judge the further development of one's ideas by whether this development does or does not conform to the somewhat arbitrarily laid down canons of this system. I say in advance that I do not feel attracted by any fixed creed, whether it has attached to it the names of Athanasius or St. Thomas Aquinas, or those of any of the modern closed-system builders who are more in fashion at the present day.

The problem of the role of science in society seems to me closely related to the problem of the role of sensory experience and reflection in the life of the individual. Fundamentally, this role seems to me to be one of homeostasis, of the maintenance of some sort of dynamic equilibrium between the individual and the circumambient world. This problem is closely related to that of the maintenance of a machine in a stable relation to its environment by means of more-or-less complicated feed-back processes. It is related to the mechanism by which we maintain a car in its orderly course along a winding road. When we find ourselves too near the right curbstone, we more or less automatically steer to the left, to avoid a collision; and we similarly avoid a catastrophe at the left curb or with traffic going the other way by steering to the right.

This sort of control presupposes some purpose on our part: let us say, the purpose to traverse the road from some point to another in an orderly fashion, without catastrophes. Ever since the work of Claude Bernard and Cannon, it has been obvious that our physiological dynamic equilibrium is maintained by similar feedbacks. What is not so obvious is the general purpose which these feedbacks subserve, corresponding to our desire to drive from one point to another.

Obviously, the maintenance of the living organism as a going concern is an important phase of this feedback—as a going concern *facing a variable and not completely known environment* yet this purpose cannot give us the whole story. It is obviously frustrated by death—for we are like the Bread-and-Butter-Fly in Lewis Carroll's *Alice through the Looking Glass*. Alice asks what it lives on. The answer is, "Weak tea with cream in it." "But," Alice says, "it must often happen that it cannot find any." "It always happens," is the



Institute Professor Norbert Wiener wrote this article while lecturing in Russia and other countries last year and it is also being published in a Russian philosophical journal.

reply, and we are told that the consequence is the death of the poor Bread-and-Butter-Fly.

Our purpose in life must go beyond that of continued individual existence, if it is to be more than futile and frustrated. Perhaps we may supplement it by the demand for continued racial existence. However, the records of geological history are as full of extinct races as our own experience is of dead individuals. It would take a bold man to say with complete confidence that the human race is not facing such a future doom, or even that all life on the earth is not to vanish in some multi-millennial cosmic catastrophe. Nevertheless, we do go on living; and in some half-understood way, we do so in what looks like a very purposive manner.

The actual purpose of life—not the purpose we allege to ourselves, but the purpose which our continued existence seeks—is thus a book with seven seals. All attempts to write this purpose down in a closed form contain something of the presumptuous in them. The salvation of our souls, which satisfied centuries of Christians, looks incomplete and unclear to a generation which does not accept with complete confidence the very definition and existence of the soul as a metaphysical entity. The set of values formulated by the psychoanalysts of today—those concerned with the well-balanced personality—have shown a similar lack of definitiveness.

Indeed, the question of the purpose of life—of the goal to be maintained by homeostasis—has no clear answer. In so far as it has any answer at all, *solvitur ambulando*, we solve it by experience, observing that the equilibrium of our body is maintained as if life did have some unspecified purpose, which we can approximately describe by saying that we seek to maintain ourselves in an active and functioning relation to the environment. Yet the further description of this purpose leads us into many paradoxes.

Is not death the stable state to end all stable states? Is not the stodgy indifference produced by the knife of the surgeon performing a frontal lobotomy, just one sort of living death? Yet it has the closest possible relationship to that “well-adjustedness” which so many psychoanalysts make their deal. What is the relation with the environment which we actually seek?

It is some sort of dynamic equilibrium which favors our continued existence as men and as the human race in the face of our ever-changing environment. The victim of a frontal lobotomy has lost some of this homeostasis, just because his traumatic indifference makes him indifferent to the changes of his environment, so that he does not feel compelled to meet them by an appropriate response.



Our environment is absorbed by us in many ways, among the chief of which are our sense organs and the nervous apparatus into which they feed and which organizes our responses. These again are passed along to the outer world by our efferent nerves and our motor organs. The entire complex of these organs, which are able to work up experience, not merely as it is immediately received, but some of it on the basis of our memory of impressions going back to childhood, is a large part of the basis of our homeostatic behavior.

This behavior is most complex, and some of the most essential parts of it are not pleasant for the reacting individual. No fate is more terrible than that of the individual suffering from an absence of the sense of pain. He must avoid cuts and burns, not by an automatic pain-reflex, but by a conscious withdrawal from all situations which are likely to wound him. His body is a mass of old wounds—all unfelt—and his life is short.

Thus the individual depends for his continued existence on a mass of impressions—many of them, though not all, quite unpleasant—which keep him in rapport with the outer environment, and a repertory of ways of combining these experiences which leads to appro-

priate actions. Sensory defects, if they are serious enough, and defects in the power to organize this sensory experience into action lead to a short life.

What the nervous system is to the individual, the ability to acquire knowledge by scientific observation, to store it and combine it in the collective memory of books, and to use it judiciously for human purposes, is to the race. The race acts as if to secure ends of racial survival, but the detail of these ends is as obscure and controversial as it is in the individual, but beyond this, much is dark.

In my opinion, much will always remain dark. Our chief guide to the function of knowledge in the body politic will largely be the empirical study of the functions which it seems actually to perform. While many studies of the informational homeostasis of the community may be of great help to us, just as they are in the field of the physiology of the individual, it is only with the greatest peril that we substitute any rigid theory of the normal homeostasis of the state for a continual observation of the actual homeostatic mechanism of the body politic in its actual working.

The promotion of a state of homeostasis on the basis of a not yet definitively known homeostatic mechanism makes great demands on the acquisition of information to keep us *en rapport* with the world about us. We must acquire and store up much information as to the ultimate use of which—whether, indeed, it will have any ultimate homeostatic use—we are still greatly in the dark. Moreover, we must be prepared to fit much of this information into a homeostatic policy concerning the details of which much remains to be determined.

Science, therefore, in so far as it fulfills a homeostatic function, cannot afford either to limit its intake of information so as to accord with a single closed homeostatic pattern, nor to turn its data into feed-back channels too closely determined in advance. The selection of the appropriate feed-back channels requires a perpetually self-renewing inquiry. This inquiry must concern the effectiveness of these feedbacks with respect to the stabilization of the performance of the state. Such a stabilization cannot afford to assume a certain best-performance on too rigid theoretical grounds, but must continually observe the stabilization of the community as we have it, with a relative suspension of judgment as to the closed purposes of this stabilization.

To put all of this into simple terms, science must learn much more than it knows how to use, and must resist the temptation to use any information it has received merely because there is a way to use it, or because some fixed program of goals, very possibly originated in very different circumstances, prescribes its use. Under these circumstances, the development of science should not await attendance on its uses, nor should the mere possible existence of uses precipitate an employment of science which may be of questionable value, dangerous, and irretrievable.

I do not subscribe to the view that the man of science should live in an ivory tower, leading a life of the intellect alone, and completely indifferent to the use which may be made of his ideas. On the other hand, he must be able to work with the immediacy of the pressure for results taken off his back and he must not let himself become, merely, a vehicle to feed ideas to others who will not see the possibilities he sees, and

are merely interested in immediate results according to a code of their own in which the scientist plays no responsible part. The scholar durst not achieve personal and unlimited freedom of thought at the cost of losing his moral responsibility, which is all that makes this freedom significant. To this needful combination of freedom and responsibility, there is no safe and riskless external guide.



In my contemplation of the good scientific institute—or rather, of an institute in which I should care to do scientific work—for we all think personally, and there is often nothing so devastatingly personal as the pretense of rigid impartiality—I would like to see the morale of the work maintained, not so much by a rigid system of superordination and subordination, as by the feeling on the part of each member that knowledge is a worthy goal, and by his experience and intuition in the selection of ideas and methods which are suitable for carrying this knowledge further.

The purpose of science in society is to enable us to react homeostatically to the vicissitudes of the future. This future is, however, not one which we can completely foresee beyond a certain very limited point, which moves ahead in time as our experience moves ahead. This being the case, we must always possess a much larger stock of information concerning the environment, physical, medical, and social, than we shall probably use in any particular course of history. It is of the utmost importance to our safety against the vicissitudes of the future that this stock of fundamental scientific information be kept extremely wide. It is of even greater importance that it be kept *potentially* extremely wide—that is, that the way for the internal development of science be kept open. It must not be at the mercy of historical predictions and prejudgments which belong primarily to one particular age, and may be proved false, incompletely justified, or irrelevant with the further development of history and the growth of our experience.

Thus the internal life of science must be preserved without a too direct dependence on the policies of the moment, or the official fashions of thought. This means that the scholar must retain for his own efficacy something—not too much—of the ivory tower attitude which it is the spirit of the times to decry.

It is well that we convince ourselves of the social usefulness of science before we go into it as a career. It is not well that we hold the test of social usefulness too immediately before us in the very difficult task of extending science.

The phenomenon that a human activity may be best pursued according to its internal logic, even if the general function of the activity should be considered most seriously in matters of the choice of a career, etc., is familiar to all of us. The man who becomes an officer in the army must be brave, but the man who asks during every military operation “Am I a brave man?” is not likely to make a good military officer. The surgeon should have convinced himself of a certain attitude of compassion before he is very far along in medical school, but the surgeon whose sense of compassion unnerves him in the performance of a cruel but necessary operation has chosen the wrong career.

Under these circumstances, we can see that it is possible for a scientist to be so socially minded that he does not find time or attention for the self-contained activity which forms a large part of the life of the working scientist. This fact has important consequences concerning the organization of scientific work. Certainly scientific work should be answerable for its value to the community—but at arm’s length. If a man has no sense of social responsibility, don’t appoint him, but if he is known to possess such a sense, for goodness’ sake don’t badger him with an unceasing inquiry as to his social responsibility while he is trying to perform the work that belongs to the fulfillment of his social responsibility. Science is a tender plant, which does not take kindly to a gardener who is in the habit of taking it up by the roots to see if it is growing properly.

In general, a good organizer will do much more by the proper choice of his men than by eternally giving orders. Pick the men who are sufficiently interested in the task that belongs to them not to need prodding. The man who will become a really good scientist will make much more severe demands upon himself than his administrative superior can ever put upon him. The latter can do much more by participating in the spirit of the work, by understanding it thoroughly and creatively, and by acting as a colleague who has earned the right to suggest by his greater understanding and skill, than he ever can by seeming to act at brutal cross-purposes with his subordinates. The man who has found the difficulties of a problem by personal experience, is not likely to accept suggestions made by someone whom he does not believe to have his own personal experience of these difficulties.



I am fully aware of certain modern attitudes in science, which are by no means confined to the countries of the Soviet system, and which, though they are to a certain degree inescapable in the modern world, I consider (because of their universal acceptance) to have an unfortunate effect on the science of the present day, through their having displaced a freer method of work, which still has a notable place in the progress of science. Here I am thinking especially of certain tendencies to evaluate scientific work by a certain purity of method, belonging to the traditions of the particular field, to the exclusion of the satisfaction of a general curiosity and interest. The pure mathematician—and Russia is very far from the chief offender in this matter—is constrained by a purity of method, which deliberately eschews any suggestion from the physical sciences, and seeks to avoid any thought which is not governed by pure abstract, unmotivated postulational thinking. That the mathematician should follow the canons of rigorous thinking *in his final publication* is axiomatic, but this does not mean that he is to forego the advantages of heuristic thinking in his choice of problems, nor in the earlier stages of his work, before it is cast in its final mold.

Similarly, the physicist of the day, by and large, will avoid studying a problem for which there is an answer in the literature. This means that he is likely to miss alternative approaches which may be of the utmost advantage in closely related problems, which have not already been brought to a final solution. Above all, he

misses that grasp of a problem which is only to be obtained by working it out *ab initia*, whatever may be the mass of existing literature concerning it. It does not become a part of his own thought.

These shortcomings of modern method are largely due to the pressure under which the scientists of the present day work in all countries. With the enormous bulk of publications in these years, the young scientist is afraid of losing his career because he does not have enough marketable results to fill the journals, or to satisfy the demand of his superiors for results, and particularly for results from their own institutes. If he does not conform to the methodological practices of these superiors, he is almost certain not to be sponsored by them. He is nobody's man, and must wait—possibly in vain—until the bulk and power of his own work forces him, willy-nilly, on the favorable attention of his colleagues.

This is the way to the most secure reputation of all, but it is a dangerous way. The young man working alone may starve for his pains, or at least be forced out of a scientific career. His final success is by no means certain—although there is a greater chance for

it than he may think in his discouragement—and it takes courage to follow one's intuition perseveringly, in the face of all discouragement. Nevertheless, you cannot play for the greatest stakes in what concerns your own career—and, far more significantly, the development of science itself—without incurring proportionate risks.

Let me here pay the greatest tribute to those older scientists, and to those administrators of science, whether they be themselves creative scientists or not, who look sympathetically on these struggles of their younger colleagues; and who, without considering every adventurous ugly duckling to be a young swan, are alert to foster power and originality. Men like this exist in every country, and I am sure from my own observation that they are to be found in Russia, but they are all too scarce everywhere.

These remarks of mine are not, and do not attempt to be, the result of any tightly woven system of ideas. They are, however, the result of a fairly long and broad experience in scientific work, and they express my deep and sincere conviction of the scientific climate in which I can, do, and wish to work.

A Special Course Recalls Dudley Buck's Cryotron

A FLIP-FLOP made of small superconductive wires operated successfully for the first time in an M.I.T. laboratory on Christmas Day in 1955. The late Dudley A. Buck, '52, was the experimenter and he called the new computer element that he had produced a cryotron.

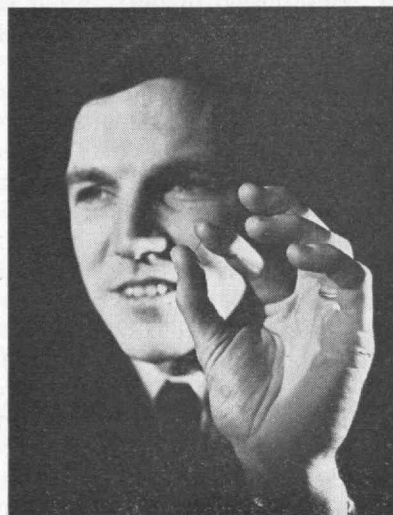
Since then laboratories throughout the world have explored the potentialities of superconductivity in switching and memory devices. Cryotrons now are made of thin layers of insulators and superconductive metals, with packing densities as high as 10,000 devices per square inch. They operate in milli-microseconds, and many authorities consider them the most promising approach to the development of cheaper, faster, reliable, very high-capacity computers.

Efforts are under way now to develop materials capable of superconductivity in the presence of high magnetic fields. These might be useful in devices to convert thermonuclear energy into electrical or propulsive power.

From Monday, August 14, to August 25, an effort will be made at M.I.T. to give engineers and

researchers an integrated picture of the physics of superconductivity, the properties of superconductive materials, and their exploitation in computer circuits. Many of Dudley Buck's friends and associates will participate in this special summer program, organized by a committee headed by Albert E. Slade of Arthur D. Little, Inc., and including in its membership Lesley L. Burns of the Radio Corporation of America, Professor Peter Elias, '44, of M.I.T., Horace T. Mann of Space Technology Laboratories, and Donald R. Young, '49, of the International Business Machines Corporation.

The lecturers will include Alan L. McWhorter, '55, Emanuel Maxwell, '48, and Carl A. Shiffman, '52, of M.I.T.; Mr. Slade, Sidney Shapiro, '47, Martin L. Cohen, and C. Russell Smallman of Arthur D. Little, Inc.; Dr. Burns and Jan A. Rajchman, of RCA; Dr. Mann and Arthur J. Learn, '58, of Space Technology Laboratories; and Dr. Young, James P. Beesley, Hollis L. Caswell, Munro K. Haynes, William B. Ittner, 3d, Nathaniel Rochester, '41, and A. M. Toxen of IBM.



Dudley Buck, '52, and his cryotron.

Additional lecturers will be John E. Kunzler and B. T. Matthias of Bell Telephone Laboratories; Leon N. Cooper of Brown University; Ronald L. Wigginton of the Department of Defense; Vernon L. Newhouse of General Electric Company; and Bernard Serin of Rutgers University.

No previous knowledge of superconductivity will be required to take this course, and no academic credit will be given. The tuition will be \$325. Inquiries should be addressed to Professor Peter Elias, Department of Electrical Engineering, Room 4-202, M.I.T., 77 Massachusetts Avenue, Cambridge 39, Mass.



Thickened parking pads like this were tested by Air Force this spring. Planes landed and took off on runway made of ice.

Ice and Ice Alloys Support the Big Planes

AN AIR FORCE B-52 jet bomber and other heavy planes used an ice runway and parking pads this spring 600 miles above the Arctic Circle. W. D. Kingery, '48, Associate Professor of Ceramics at M.I.T., was the principal scientific investigator and reported that these Project Ice Way tests indicated that sea ice could support even heavier loads.

The experimental 14,000-foot runway, one of the world's largest, was built on a natural ice sheet near the Thule Air Base by removing most of the snow cover. The parking pads were made thicker to allow for gradual deformation of such ice under heavy loads. One of these was made about eight feet thick by flooding the area with sea water, and another was made only six feet thick but re-enforced with fiberglass. This was the first large-scale trial of the "ice alloy" system that Professor Kingery developed.

Some of the pilots were quite skeptical at first about landing on ice, but all of them were enthusiastic afterwards and said the runway was smoother than many of the hard-surfaced strips they had used.



Mats of fiberglass were laid out to strengthen natural ice.



Dr. Kingery measured deflections; D. French, '58, took notes.

Institute Yesteryears

25 Years Ago . . .

ON JULY 1, 1936, Professor Edward L. Moreland, '07, Head of the Department of Electrical Engineering, retired as the 42d President of the Alumni Association, being succeeded in the office by Donald G. Robbins, '07, Vice-president of Associated Depositors, Inc.; and Marshall B. Dalton, '15, retired as Vice-president of the Association, being succeeded by Harold B. Richmond, '14.

Mr. Richmond had been a member of the Executive Committee during the Moreland administration, as had George W. Treat, '98, whose term thereon also expired at the close of 1935-1936. These two vacancies were filled for the Robbins administration by Lawrence Allen, '07, and Professor Arthur L. Townsend, '13.

[Two of the above-named subsequently served as Presidents of the Alumni Association, namely: Dalton as the 44th President in 1937-1938 and Richmond as the 45th in 1938-1939.]

The Centennial Alumni Book

THE eleventh edition of the M.I.T. Alumni Register, issued in the Institute's Centennial year, contains the names of 66,667 Alumni, of whom 51,979 are listed as living. It also contains the names of 12,646 present and former members of the Institute's Faculty and staff. This is 14 per cent more Alumni and 39 per cent more others than were listed in the 1955 directory.



Of the 49,886 Alumni listed geographically in the 1961 book, 92 per cent are within the United States and its dependencies and 8 per cent are in 103 foreign countries.

The three states having the most Alumni are Massachusetts with 11,614 (25 per cent of the national total), New York with 6,749 (15 per cent), and California with 4,014 (9 per cent). The three states showing the greatest increases since the 1955 book was issued are: Florida, up 59 per cent; California, up 47 per cent; and Michigan, up 44 per cent.

Canada, with 690 Alumni, ranks first among the foreign countries; India is second with 220, and France and Mexico are tied for third place with 188 each. The United Kingdom has 183.



Four per cent of the living Alumni have been out of the Institute 50 or more years, 23 per cent from 31 to 50 years, 42 per cent from 11 to 30 years, and 31 per cent 10 years or less.

The Senior Alumnus is Godfrey L. Cabot, '81, who was 100 years old on February 26, 1961; and the senior graduate by both class and age is William F. Jordan, '86, who was 97 on November 1, 1960.

Henry E. Worcester, '97, Frank J. Chesterman, '05, and Thomas C. Desmond, '09, retired as alumni term members of the Institute's Corporation, their successors for 1936-1941 being William S. Newell, '99, Frederick W. Garber, '03, and B. Edwin Hutchinson, '09.

[Later, five of the above-named were elected life members of the Corporation: Worcester in 1937; Chesterman, 1938; Desmond, 1941; Hutchinson, 1951; and Newell, 1952.]

Faculty retirements at the close of 1935-1936 included Professors James R. Jack, Head of the Department of Naval Architecture and Marine Engineering; James L. Tryon, Director of Admissions; George B. Haven, '94, of the Department of Mechanical Engineering; Nathan R. George and Leonard M. Passano of the Department of Mathematics; and Carroll W. Doten of the Department of Economics.

Congratulations were being extended to *George A. Campbell*, '91, and *Marshall C. Balfour*, '19, upon receiving, respectively, the Medal of Honor of the Institute of Radio Engineers and the Silver Medal of the Greek Academy of Sciences, Arts, and Letters . . . to *Charles A. Chayne*, '19, as the new chief engineer of Buick Motor Company . . . and to *John G. Kirkwood*, '29, who was awarded the Langmuir Prize by the American Chemical Society.

50 Years Ago . . .

CONCERNING the condition of the Cosmopolitan Club, a year old in 1911, The Review reported that it "has over 125 members, of which there are 15 Americans. The organization has club rooms at 480 Boylston Street, directly opposite Rogers Building, which are always open. Here the periodical press of the entire world is represented. The rooms are also provided with a piano, magazines, and games of all kinds. Chinese tea is served regularly, and the rooms have become a favorite gathering place where Americans and foreigners mingle freely. Entertainments are provided, which take the form of national nights. On these occasions the entire program is given by students from one country. . . .

"It will be interesting to our readers to know that among the foreigners are some of the brightest men that come to the Institute. It is true that many of them are poor scholars, but, when one considers the handicaps they are under, the records that some of them make here are remarkable. It is obvious that the club offers an opportunity to these men to learn something of the customs and habits of the United States, thus assisting them greatly during the first months of their sojourn in a strange country."

75 Years Ago . . .

ON JULY 2, 1886, President Francis Amasa Walker was being congratulated upon the occasion of his 46th birthday.

100 Years Ago . . .

ON JULY 18, 1861, Samuel Wesley Stratton, 8th President of the Institute during 1923-1930, and Chairman of the Corporation in 1930-1931, was born at Litchfield, Ill.

BUSINESS IN MOTION

To our Colleagues in American Business ...

It has often been mentioned in these messages that in order to produce the best possible product at the least possible cost, it is a good idea to take your suppliers into your confidence...tell them your problems...seek their aid.

The following incident is a striking example of the advisability of doing just that.

The Dayton Precision Manufacturing Company, maker of the commutator you see illustrated, was having difficulties with the ferrous metal it was using for the hub; for not only did the rod from which the hubs were fabricated have to be drilled but it also had to be able to withstand a flanging operation. Their Chief Engineer decided to discuss this with one of Revere's Technical Advisors.

After a thorough study of the problem Revere Brass Rod of a certain alloy was recommended and samples were furnished. The manufacturer found the machinability of the brass rod to be outstanding, being readily and speedily drilled. Also, it withstood

the flanging operation...a set of manufacturing conditions where only brass, the right kind of brass, outshines all other metals and alloys.

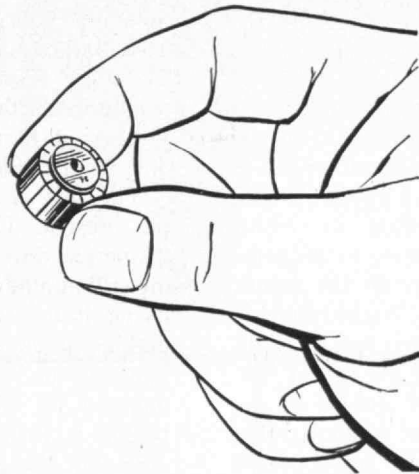
The final score showed that the low first cost of the brass rod, plus the fact that it could be machined faster and more easily than ferrous metal, resulted

in a superior product at a saving in production cost. A further advantage was the added sales appeal of the brass hub.

There you have another example of how Revere in collaboration with the manufacturer's engineering department, helped "fit the metal to the job," which resulted in a better part at the least possible cost.

Revere, a supplier, is conscious that still other suppliers can often collaborate to help customers produce a superior product for less money.

And because almost every industry you can name is able to cite similar instances, we suggest that no matter what your suppliers ship you, it may pay you to take them into your confidence.



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Books

THE ARCHITECTURE OF AMERICA: A SOCIAL AND CULTURAL HISTORY, by John Burchard, '23, and Albert Bush-Brown of M.I.T.; Atlantic-Little, Brown (\$15). Reviewed by Henry A. Millon, Assistant Professor of Architectural History.

A GOOD new book on American architecture has just appeared. Written by two members of the M.I.T. Faculty, the new volume makes all previous studies of the subject appear to be either too generalized or too concerned with only one fragment of the whole. The authors do not recognize any limitations in themselves or in the range of the subject matter. Architecture is treated in its broadest terms as a "social and cultural" phenomenon. As a result we now have for the first time a single volume that fairly places 300 years of American architecture within a framework that treats equally of intellectual currents, philosophical movements, social theory, political transformations, industrial developments, and fashionable foibles.

Such a book can only be the result of a vast amount of original research and collation of pertinent information collected through organized complementary readings. The book, which was commissioned by the American Institute of Architects to celebrate its 100th anniversary in 1957, took over four years to prepare.

The first section is an extended essay on the nature of architecture. The opening sentence, "Architecture is a social art," is examined in some detail, but the bulk of the first section is designed to initiate the reader into some of the problems of evaluation of quality in architecture. This section may prove to be of great value to people who have been bewildered by some of the terminology used in architectural criticism.

The main body of the book is divided chronologically into five parts. The first deals with the beginnings of American architecture from 1600 to 1860. It opens with a Rachel Caronesque review of the American continent, then goes on to discuss the early architects and the early indigenous architecture. The work of the architects is set in the frame of the foundation of the American republic and the authors clearly demonstrate the relationship between architectural form and intellectual climate.

The second section is principally concerned with the varieties of Victorian architecture and here, for the first time, the heroes and villains begin to appear. It becomes clear that Burchard and Bush-Brown think that industrial methods, scientific and technological discoveries, and a concern for art that is rooted in the utilitarian, constitute the bases of the "good" American architecture, while the "tastemaker architect," who attempted "to reproduce in America an overlay of European art culture" laid the groundwork for what they feel to be "bad" American architecture. The hero of this section and the hero of the book is Henry Hobson Richardson. A chapter is devoted to a delightful

summary of Richardson's life and the buildings he produced before his untimely death. The villain of this piece is Richard Morris Hunt, who liked European forms, built palaces for wealthy patrons, and otherwise hastened what the authors feel to be the inevitable social revolution.

The third part covers the years from Richardson's death in 1886 to the beginning of the first World War. The authors here outline for the first time the profound cleavage which develops in the Twentieth Century between European and American achievements. Europeans such as Chagall, de Chirico, Duchamp, Matisse, Picasso, and Stravinsky, are contrasted to Americans such as Glackens, Sloan, Prendergast, Sargent, Abbey, Melville, London, Norris, and Sinclair. The outstanding American architects in this period are shown to be Louis Sullivan, '74, and his pupil Frank Lloyd Wright.

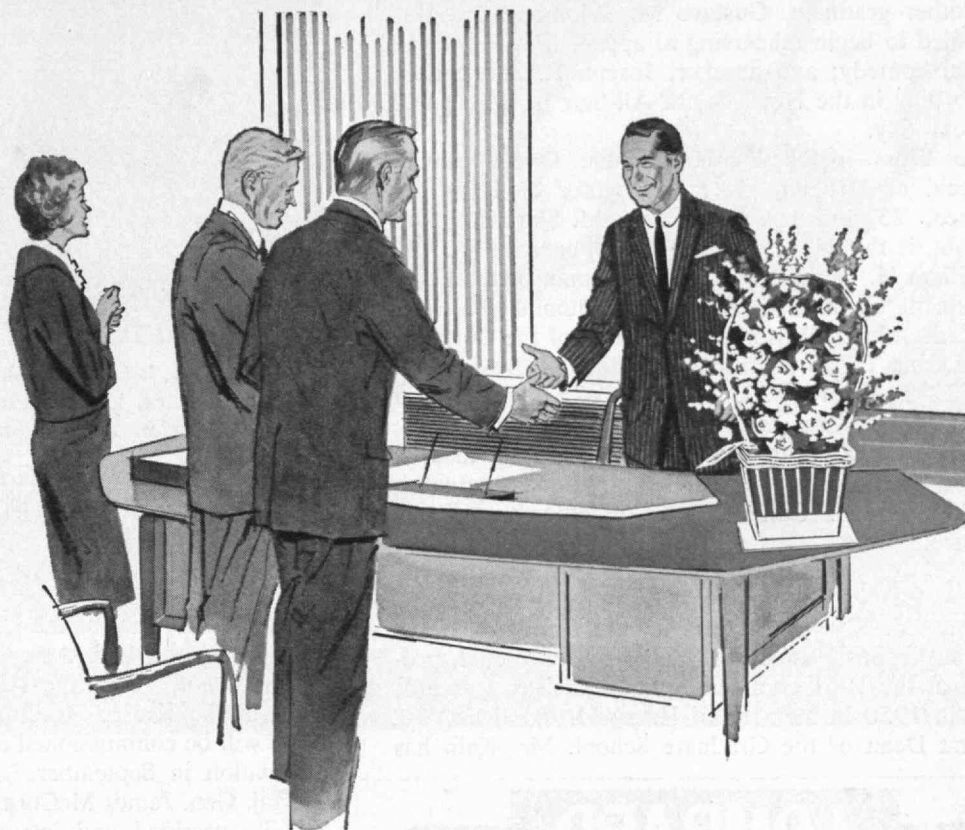
The next to last section of the book opens with the construction of the Woolworth Building and closes with the Empire State. "Without doubt it was a time of bad taste and corruption, but mostly it was a time of complacent lassitude." This quotation characterizes the authors' opinion about architecture and society in the years between the first World War and the coming of Franklin Roosevelt. There are no heroes in America unless they be science and technology, but in Europe it was the period of Mies van der Rohe's, Walter Gropius', Alvar Aalto's, and Le Corbusier's greatest triumphs. In the United States we had instead Fuller's Dymaxion House, the Chicago Century of Progress, and Henry Bacon's Lincoln Memorial.

The last section covers architecture from 1933 to the present. The Age of Europeans in America saw "America develop a modern architecture by assimilating still another immigrant art form and gradually modifying it to its characteristic institutions and thereby making it as American as any architecture was ever likely to be." There are many heroes and many are damned by silence. The outstanding master of this period is Frank Lloyd Wright in his second Golden Age, but the authors discuss the work being done by contemporaries such as Yamasaki, Bunshaft, Rudolph, Pei ['40], Stone ['27], Saarinen, and Victor Lundy. This section is certainly to date the most comprehensive survey of postwar architecture in the United States.

The authors see the history of American architecture as a struggle between the foresighted and the hindsight, the virile and the effete, the realist and the idealist; in short, in pragmatist American terms, the good and the bad. They describe a grand drama that has as its prize for the victor the undying admiration and acclaim of the American people.

An engaging aspect of the book is its opinionatedness. Discussion of architectural quality, the praising or condemning of a building or architect, do not appear as oracular pronouncements from unassailable Olympian heights. Rather, one senses the authors themselves are fallible. They certainly have flexible rules for measurement of architectural value and, throughout, there is the sense that much of what they say about specific buildings is opinion and open to discussion.

The book will be most valuable, perhaps, to future generations as a social document indicating the thoughts, attitudes, and prejudices of two major architectural critics in the mid-Twentieth Century.



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1,166 Students Receive Degrees

(Concluded from page 34)

roads Africa program. They were John E. Ritter, Jr., Stephen N. Salomon, and Kenneth M. Singer, who had studied, respectively, chemical engineering, physics, and quantitative biology.

Another graduate, Gustave M. Solomons, Jr., was scheduled to begin rehearsing to appear in a Broadway musical comedy; and another, Joseph R. Skenderian, was to play in the North-South All-Star lacrosse game the next day.

The Class included nine women. One, Susanna Ravecca, of Uruguay, is the daughter of Francisco Ravecca, '23, and one, Mrs. B. W. M. Stephenson, of Belmont, is the wife of Gerard J. Stephenson, Jr., '59.

William H. Dennen, '42, was chairman of the Commencement Committee, and the ceremonial personnel included: John J. Wilson, '29, marshal of the Corporation; Deans Pietro Belluschi, Gordon S. Brown, '31, John E. Burchard, '23, Howard W. Johnson, and George R. Harrison, marshals of recipients of degrees; Thomas H. D. Mahoney, marshal of the faculty; Richard L. Balch, faculty marshal of the graduates; and William H. Carlisle, Jr., '28, marshal of the audience.

The Goodwin Medal Winner

RICHARD Y. KAIN, '57, received the Goodwin Medal for conspicuously effective teaching. This medal, presented at the 1961 commencement exercises, was provided in 1950 in memory of Harry M. Goodwin, '90, the first Dean of the Graduate School. Mr. Kain has



Earl W. Biven, '61, of Honolulu, was personally congratulated by Admiral Luis de Florez, '11, on commencement day for having won a De Florez prize for ingenuity.

taught electronics for the last four years and students in his "Principles of Digital Computation" class last year praised his work highly.

The Commissioning Ceremony

FORTY-SEVEN MEN of the Class of 1961 received commissions in the U.S. Army Reserve, 12 in the Naval Reserve, and 10 in the Air Force Reserve at exercises in the Kresge Auditorium on June 8. Nineteen more will be commissioned after summer work or upon graduation in September.

Maj. Gen. James McCormack, '37, Vice-president of M.I.T., presided and introduced the armed services' spokesmen: Brig. Gen. Merrill L. Tribe for the Army; Capt. William A. Brockett, '43, for the Navy; and Maj. Gen. James Ferguson for the Air Force. Oaths of office were administered by Col. Irving W. Finberg, '31, Rear Adm. Carl F. Espe, and Col. Frederic H. Fairchild.

Rabbi Herman Pollack gave the invocation and the Reverend Donald Ihde the Benediction. Music was provided by the Needham High School band.



FOUR GENERATIONS of the family of Thomas N. Hastings, '61, have attended M.I.T. Shown with his grandfather, Russell Hastings, '10, he is the son of Russell Hastings, Jr., '34, and great grandson of Thomas N. Hastings, '81.

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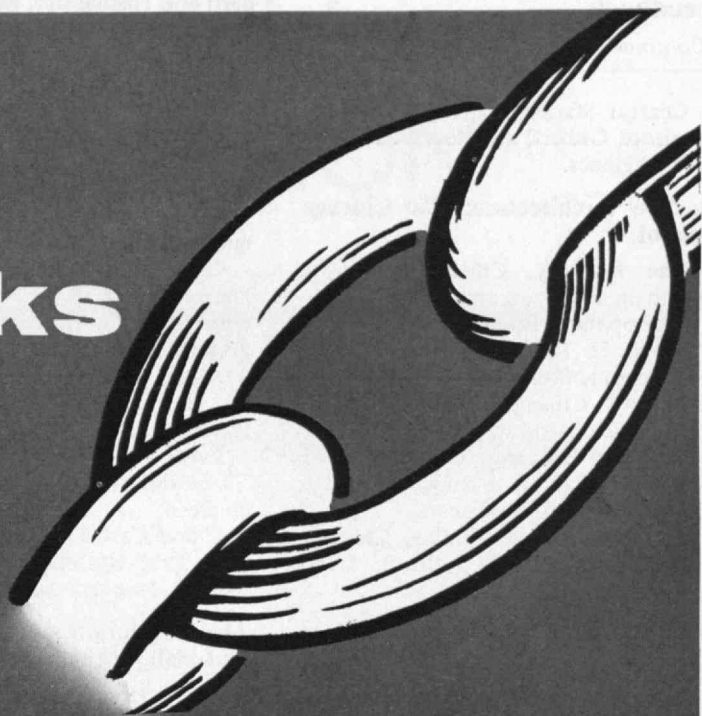
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W. W. K. FREEMAN '22

R. H. ROBINS '50

J. L. WAUTERS, JR. '56

R. HARRIS '37

F. J. BUMPUS '51

R. L. CHILD '57

Feedback

(Continued from page 3)

Central Station, Chicago, 1892-93. Bradford Gilbert, architect; J. F. Wallace, engineer.

A New Architecture: The Chicago School

The Rookery, Chicago, 1884-86. Burnham and Root, architects.

Metropolitan Building, Minneapolis, 1888-90. E. Townsend Mix, architect.

Wholesale Store, Marshall Field and Company, Chicago, 1885-87. Henry Hobson Richardson, architect.

Reliance Building, Chicago, 1890, 1895. Burnham and Root, architects; E. C. Shankland, engineer.

Stock Exchange Building, Chicago, 1893-94. Adler and Sullivan, architects.

The Steel Framed Building in the Twentieth Century

Woolworth Tower, New York City, 1911-13. Cass Gilbert, '80, architect; Gunvald Aus Company, engineers.

Empire State Building, New York City, 1929-31. Shreve, Lamb and Harmon, architects; H.G. Balcom and Associates, engineers.

Rockefeller Center, New York City, 1930-40. Hood and Fouilhoux, Corbett, Harrison and MacMurray, Rein-

hard and Hofmeister, architects; H.G. Balcom and Associates, engineers.

Inland Steel Building, Chicago, 1955-57. Skidmore, Owings and Merrill, architects and engineers.

Crown Hall, Illinois Institute of Technology, Chicago, 1955-56. Ludwig Mies van der Rohe and Pace Associates, architects; Frank J. Kornacker, engineer.

General Motors Technical Center, Detroit, 1954-55. Eero Saarinen, architect; Smith, Hinchman and Grylls, architects and engineers.

Alcoa Building, Pittsburgh, 1950-52. Harrison and Abramovitz, architects.

Lever House, New York City, 1951-52. Skidmore, Owings and Merrill, architects.

Union Carbide Building, New York City, 1958-60. Skidmore, Owings and Merrill, architects.

The Revolution in Concrete: Frame and Slab, Shells and Plates

Ward House, Port Chester, N.Y., 1871-76. Robert Mook, architect; William E. Ward, engineering designer.

California Academy of Sciences, San Francisco, 1889. Ernest L. Ransome, engineer.

Baha'i House of Worship, Wilmette, Ill., 1920-21, 1930-43, 1947-52. Louis Bourgeois, architect; Allen B. McDaniel, '01, engineer.

Price Tower, Bartlesville, Okla., 1954-55. Frank Lloyd Wright, architect.

Alfred Newton Richards Medical Research Building, University of Pennsylvania, Philadelphia, 1959-60. Louis I. Kahn, architect; Keast and Hood and August E. Komendant, engineers.

Kips Bay Plaza Apartments, New York City, 1959-60. I. M. Pei, '40, architect; August E. Komendant, engineer.

Police Administration Building, Philadelphia, under construction 1961. Geddes, Brecher and Qualls, architects; August E. Komendant, engineer.

Reynolds Metals Company Office Building, Detroit, 1958-59. Minoru Yamasaki, architect; Ammann and Whitney, engineers.

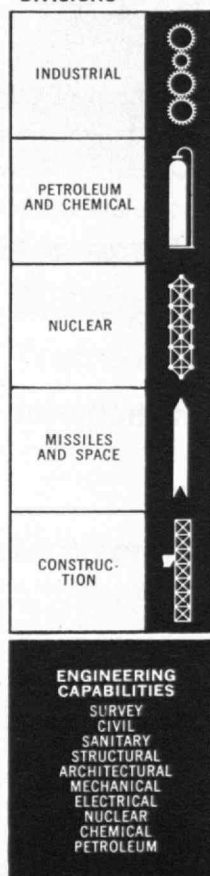
Texas Instruments Incorporated Semi-Conductor Factory, Dallas, 1957-58. O'Neil Ford and Richard Colley, architects; Wallace Wilkerson and Felix Candela, engineers.

Administration Building, S.C. Johnson and Son, Inc., Racine, Wis., 1937-39. Frank Lloyd Wright, architect; Westey W. Peters, engineer.

Service Hangar, Trans World Airlines, Inc., Airport, Kansas City, 1955-56. Ammann and Whitney, engineers.

(Concluded on page 62)

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Feedback

(Concluded from page 60)

School of Architecture, University of Minnesota, Minneapolis, 1959-60. Cerny Associates, architects.

New Structural Techniques in Metal and Wood

Travel and Transport Building, Century of Progress Exposition, Chicago, 1933-34. Edward Bennett, Hubert Burnham, and John Holabird, architects; B. M. Thorud and Leon S. Moissieff, engineers.

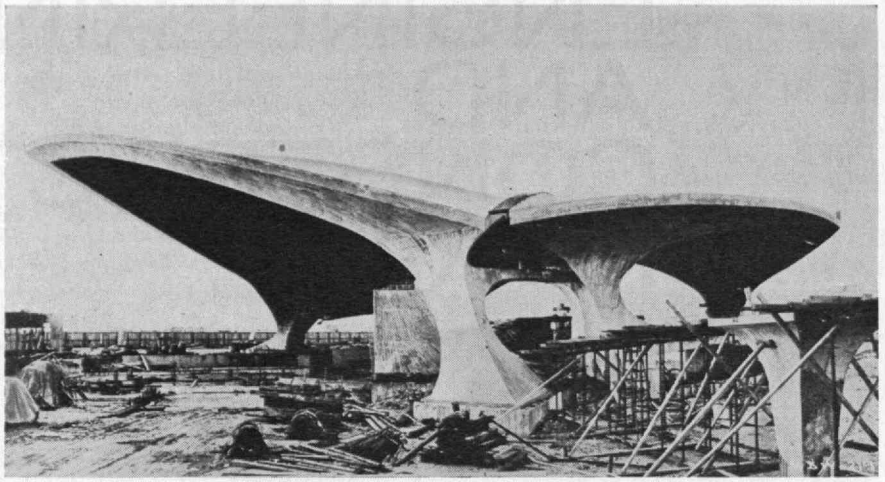
United States Pavilion, World's Fair, Brussels, Belgium, 1958. Edward D. Stone, '27, architect.

Villita Assembly Building, San Antonio, 1958-59, O'Neil Ford, architect; William E. Simpson Company, engineers.

Convention Auditorium, Democratic Party, Houston, 1928. Kenneth Franzheim, '13, and W. A. Dowdy, architects; W. Klingenberg and George L. Kelly, engineers.

St. Paul's Lutheran Church, Sarasota, Fla., 1960. Victor A. Lundy, architect.

Central Lutheran Church, Eugene, Ore., 1952. Pietro Belluschi, architect; Skidmore, Owings and Merrill, associates; Cooper and Rosé, engineers.



ENGINEERS working with Eero Saarinen on the TWA terminal to be completed this fall at Idlewild International Airport have included Harold Birnbaum, '47, of Ammann and Whitney. The concrete roof shell's thickness varies from eight inches at the edges to 44 inches at the centerplate.

House, Raleigh, N.C., 1955. Eduardo Catalano, architect.

Project, Plastic Structural Panels for a School, 1959. Departments of Architecture and Civil and Sanitary Engineering, M.I.T.; Marvin E. Goody, '51, project supervisor.

Mobilar Space Truss, 1945. Designed and patented by Konrad

Wachsmann and Paul Weidlinger.

Car Repair Shop, Union Tank Car Company, Baton Rouge, 1958. Battey and Childs, architects and engineers; Dome by R. Buckminster Fuller.

American Society for Metals Building, Cleveland, 1959-60. John Kelly, architect; Fuller's Synergetics, Inc., structural design.

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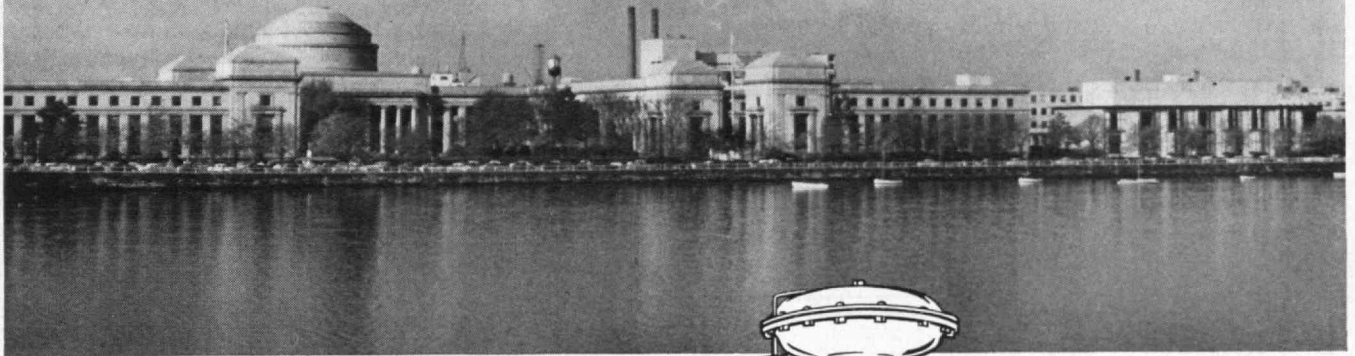
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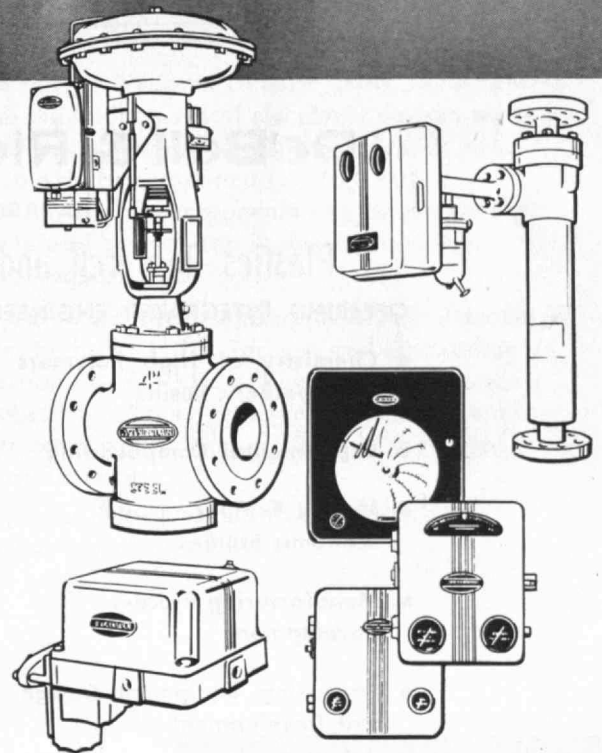
George B. Allen, '24
Manager, Distributor Sales

Eric A. Bianchi, '29
General Manager

Paul Wing, Jr., '34
Manager of Engineering

Warren F. Priest, '27
Eastern Regional Manager

John W. Robins, '32
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Books

(Continued from page 56)

ON THERMONUCLEAR WAR, by Herman Kahn; Princeton University Press (\$10). Reviewed by Paul Cohen, '35, Engineering Section Head for Anti-Submarine Warfare, Sperry Gyroscope Company.

IN THIS powerful provocative book, Herman Kahn tackles what is the greatest physical problem of our era: man's fate in a world of nuclear weapons. Overwhelmed by the enormity of the damage that could result from atomic warfare, too many of us, Kahn believes, have sought refuge in the wishful thought that no nation will attack another nation which has an ample supply of nuclear bombs. Even these people must admit, if they stop to scrutinize this belief, that war can still break out because of accident, irresponsibility, insanity, or miscalculation. But Kahn makes a convincing case that, aside from these probabilities, large as they can be, it is quite possible for a nation better armed than we, with significant civil defenses and ruthless in applying its power, either to subject us to atomic blackmail or to strike first and win. By this, he means to win in the old-fashioned sense, by being better off in terms of power and resources after the war than before, and by suffering, quite likely, considerably smaller losses than Russia did in World War II.

Thus we must be prepared to fight a nuclear war. And if we are prepared, we will fare far better than a nation caught in a web of fallacies about the results of nuclear explosions. There is a vast difference, he points

out, between a war in which this nation takes 2,000,000 casualties, to recover quickly, and one in which it loses half or 90 per cent of its population and requires a century to recover (if at all, add some critics). To state his case in his words, it is "possible for us or the Soviets to cope with all the effects of a nuclear war, in the sense of saving most people and restoring something close to the prewar standard of living in a relatively short time. But there is no reason to believe that this will be true unless both nations investigate the problem more thoroughly than has been done so far, and then take the necessary preparation." In other words, the survivors need not envy the dead. It is a formal part of Soviet dogma that it can and will survive and rebuild after a nuclear war.

To many people, the results of such a war are too horrible to think about. They recoil in revulsion from the thought of dissecting this corpse and trying to learn from the remains how the fatality could have been avoided or postponed, or at least how a fatal accident could have been held to only an injury. Kahn's purpose is to make a massive, detailed examination of this problem and its effects on national policy and strategy. He may be wrong in some details and conclusions. But in insisting that this area be given objective, quantitative analysis and planning, he is doing this country a great service.

As an experienced and sophisticated research analyst, Kahn has a professional awareness of the many incalculable aspects, the uncertainties, and the logical traps that face such an investigation. The least he does

(Continued on page 66)

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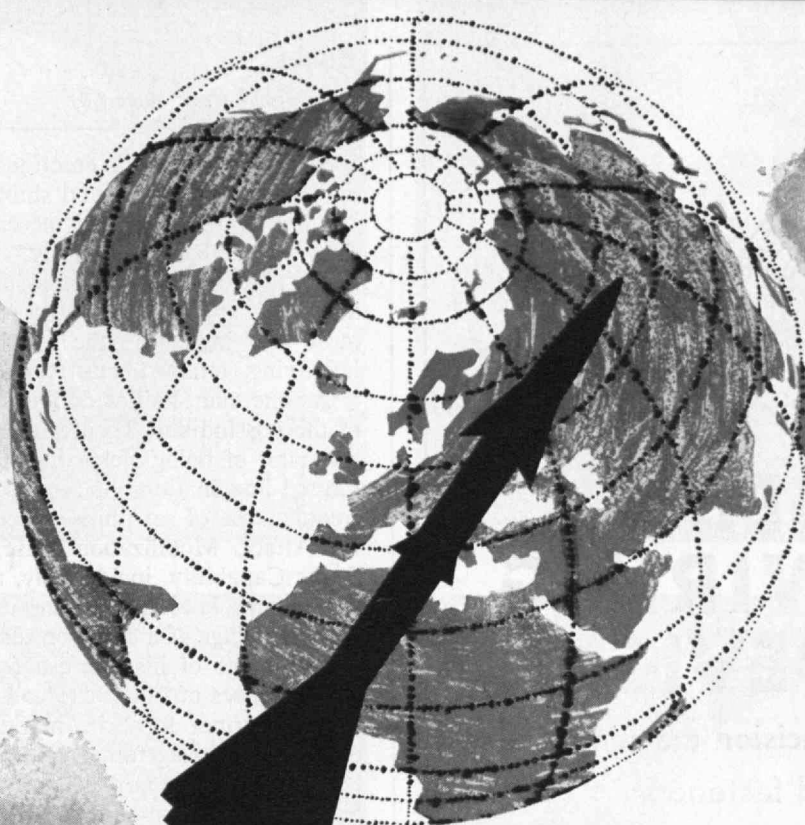
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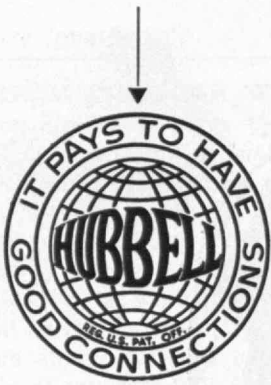
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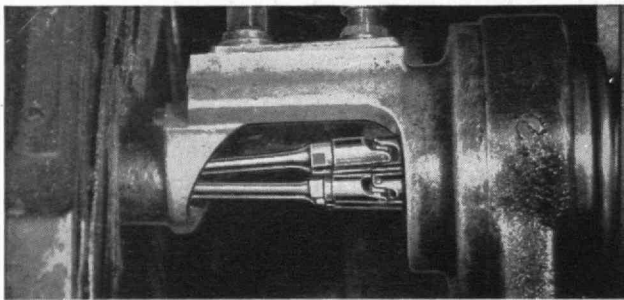
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Books

(Continued from page 64)

is to discard the usual emotional, broadbrush approach with its handwringing and shibboleths—its warnings of "mutual annihilation," "inescapable end of civilization," "destruction of all life," and so on. If it is conceded that the bulk of his assumptions are reasonable, and they appear so to this reviewer, he does much more—by indicating the rough outlines of this huge, horrifying, multi-dimensional problem.

As one man, he has doubtlessly examined only some of the possibilities. To use his own words, "history has the habit of being richer and more ingenious than the limited imaginations of most scholars or laymen." His frequent use of set phrases, such as Finite Deterrence, Pre-Attack Mobilization Base, and Creditable First Strike Capability, incidentally, may be viewed by some as pedantry, but it has the very useful function of creating the beginnings of a common terminology for discussion.

The range of his interests is vast, from the genetic consequences of fall-out to catastrophe insurance rates. On the former topic he points out that, as a consequence of existing forces, some 4 per cent of our present live births are now affected by major congenital defects, half of them probably of genetic origin. Against such references he examines various levels of radiation exposure that might occur in war in terms of what is known about their long-term effects. Naturally the results are depressing, but considering what other evils humanity has survived, natural or self-inflicted, the dangers are not overwhelming.

His analysis of our civil defenses is sharply critical. Our 10 largest metropolitan areas contain some 50 million people, while there are less than half that number in the 10 matching Soviet areas. But it appears that Russia has done more about educating and protecting noncombatants—an issue, he points out, with important military and bargaining values.

For those who think that present weapons are the ultimate in terror, Kahn's remarks on Doomsday Machines are recommended.

Obviously, this reviewer would not stress such details of Kahn's work if he did not believe in Kahn's fundamental premise that thermonuclear war may be unavoidable. It's a tough world—it's generally been a tough world—and we might as well prepare to live in it as safely as possible.

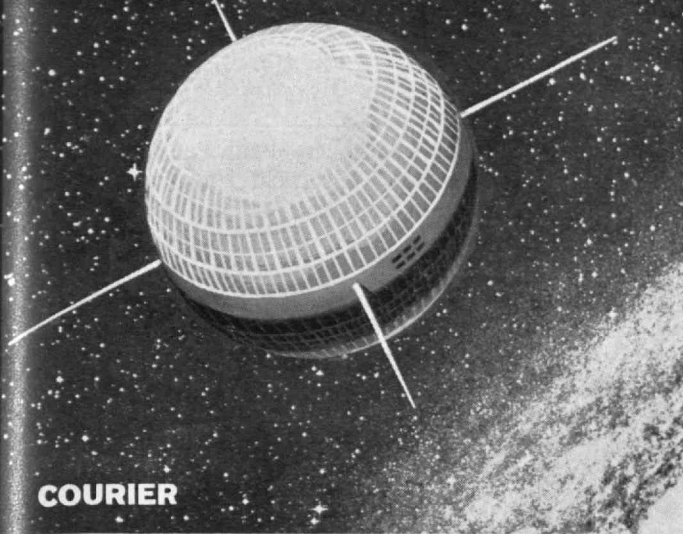
Technical Books

NEW, SPECIALIZED books likely to be of especial interest to M.I.T. Alumni include:

Carl Becker, a biographical study of American intellectual history, by Burleigh Taylor Wilkins, formerly of the Department of Humanities at M.I.T. (The M.I.T. Press and Harvard University Press, \$5.50).

Design of Welded Structural Connections, by John B. Scalzi, '40, and Omer W. Blodgett (The James F. Lincoln Arc Welding Foundation, Cleveland, \$1).

Engineering Management and Administration, by Val Cronstedt, with a foreword by Institute Professor, Emeritus, C. Richard Soderberg, '20, of M.I.T. (McGraw-Hill Book Company, \$8.50).



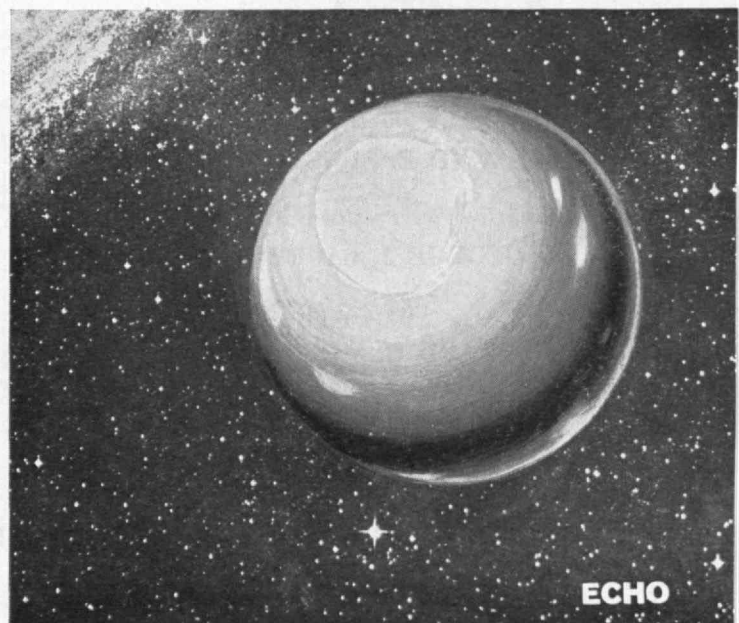
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DISCOVERER



MIDAS



ECHO

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Philco has made many major contributions to the nation's vital space programs. COURIER, the world's first advanced communications satellite, was designed and built by Philco. Philco played a major role in the development and installation of the complex communications, command, tracking and data systems for the DISCOVERER program. Space-borne and ground communications systems for MIDAS and other satellites have been Philco designed. Philco developed and installed the tracking and receiving systems for the Air Force Passive Satellite Relay Link, which utilizes

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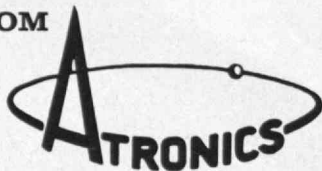
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Books

(Concluded from page 66)

Frequency-Power Formulas, by Paul Penfield, Jr., '60, Assistant Professor of Electrical Engineering at M.I.T. (The M.I.T. Press and John Wiley & Sons, Inc., \$4).

Iterative Arrays of Logical Circuits, by Frederick C. Hennie, 3d, '55, instructor in Electrical Engineering at M.I.T. (The M.I.T. Press, \$4.95).

Modern Physics Buildings, Design and Function, a project of the American Association of Physics Teachers and the American Institute of Physics supported by Educational Facilities Laboratories, Inc. (Reinhold Publishing Corp., \$13.50).

Social Factors in Economic Development: The Argentine Case, by Tomas Roberto Fillol, '60, a book based on his master's thesis which won the E. P. Brooks Prize in 1960 (The M.I.T. Press, \$3.75).

The Thermal Processing of Food, by Samuel A. Goldblith, '40, and J. T. R. Nickerson, '32, of the M.I.T. Department of Nutrition, Food Science and Technology, and M. A. Joslyn of the University of California (The Avi Publishing Company, Inc., Westport, Conn., \$16.50). The book is dedicated to the late Bernard E. Proctor, '23, and the royalty from it will go to the Proctor Memorial Scholarship Fund at M.I.T.

Transmission of Information, a statistical theory of communications, by Robert M. Fano, '41, Professor of Electrical Communications at M.I.T. (The M.I.T. Press and John Wiley & Sons, Inc., \$7.50).

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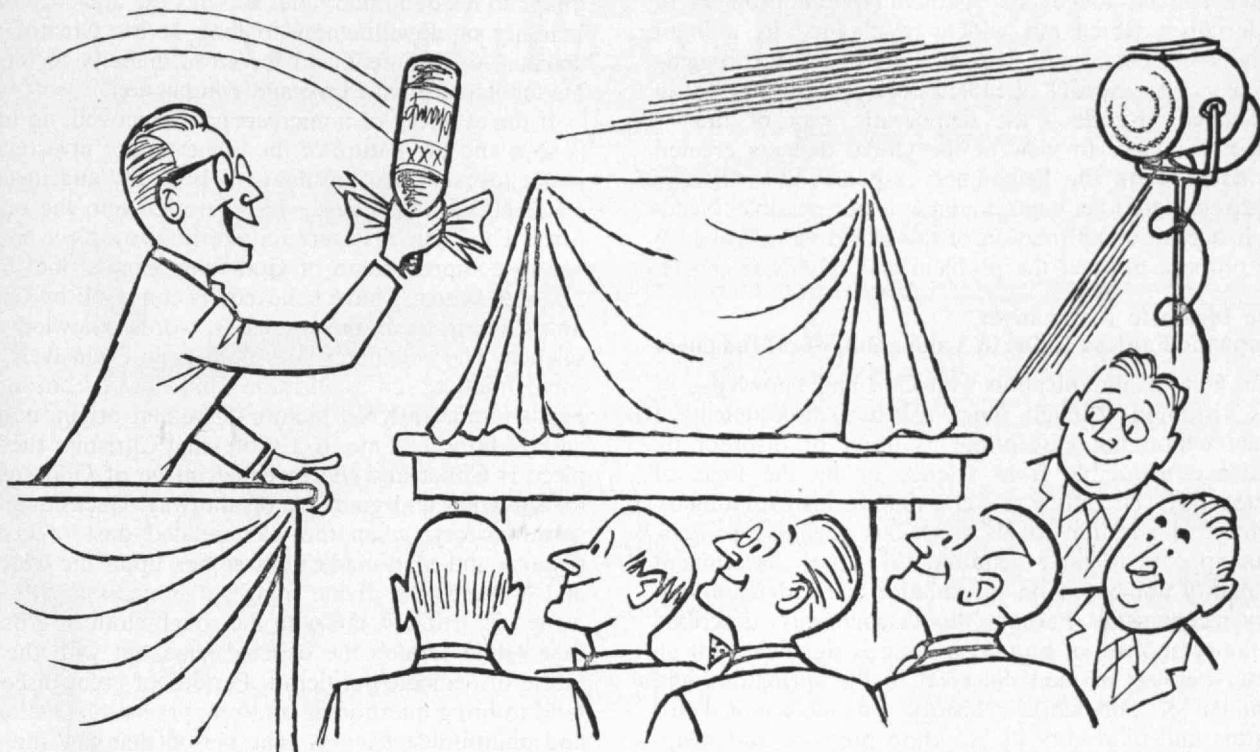
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Life, Science, and Inner Commitment

(Continued from page 45)

We can no longer be apathetic to the problem of materialism which has widely proclaimed its militant program: the conquest of men's minds. Mere shrugging off the crass aspects of materialism as contrary to an ill-defined attitude—"the democratic way of life"—will not suffice. In view of the global dangers created by science and the heightened responsibilities thereby incurred, a middle, neutral course is not possible. Needed is a positive affirmation of the world view on which we propose to meet the problem and chart our course.

The Idealistic Alternative:

Prophetic Faith as Guide to Values and Moral Judgment

Man finds communication with God and knowledge of His visitation through inner spiritual discernment, a phenomenon not susceptible to proof or disproof by evidence deducible from science or by the logic of philosophy. Therefore at some time in his evolutionary history, in addition to his conscious cognitive powers, man appears to have acquired this inner discernment of reality not based on information derived from sensory mechanisms. Perhaps this discontinuity, described in the symbolism of prophetic faith, is significant for an understanding of man. Survival in the springtime and summer of our world's history was determined for worms and dinosaurs by selection pressure and adaptive fumbings of genetic evolution. In the last "minutes" of our planet's history, presumably since acquiring inner discernment, man seeks survival for endless further becomings, or, in the terminology of prophetic

faith, salvation. Symbolically having tasted of the fruit of knowledge—culminating in science as we know it—and having gone far on the way toward subjecting all things to his dominion, man still has the ancient failing: inability or unwillingness to look at his Creator with spiritual discernment and therefore inability to look at his fellow-man with love and compassion.

If the eyepiece of a microscope is removed, no image is seen and the nature of the object under investigation is not revealed. But an image is perfectly and instantly observed when the eyepiece is inserted into the optical path. The wish to insert the spiritual eyepiece and to obtain comprehension of God that permits one to say "I know Whom I have believed" is conveyed by God in Spirit and in truth, not in creeds, words, knowledge, or science. The encounter with God is an exclusively personal matter; its realization and interpretation depends importantly on factors of human origin, culture, and tradition. To me as a professing Christian the eyepiece is Christ and the revealed image of God suffices for salvation and guidance on the way. Occasionally in world history, when the accumulated dust of creedal dogmas and man-made idols settles upon the eyepiece and obscures the divine Image, it is necessary to wipe away the artifacts, not with the rough cloth of crusades that would scratch the delicate glass but with the soft fabric of dedicated criticism. Periods of great discovery tend to bring questioning and reappraisal of theological and philosophical tenets. The period that saw the voyages of discovery and the Copernican revolution also witnessed the Reformation. Possibly the current unprecedented forward thrust of scientific discovery will

(Concluded on page 72)



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web control NEWS

Volume 1, Number 1

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Web Viewer Stops Motion, Shows Every Inch of Length and Width of Web

Now with Mount Hope's remarkable new Barr & Stroud WEB VIEWER you need not stop your press to check register.

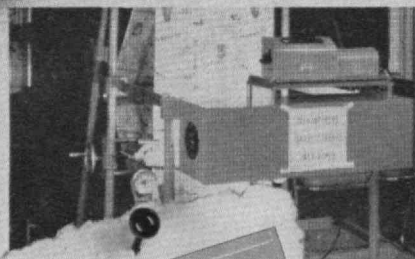
There are many other advantages, too:

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Viewer is compact (portable model available, too). Can be installed on vertical, horizontal or angular run. Web can be viewed from any angle.

No additional light required (unless room is dark).

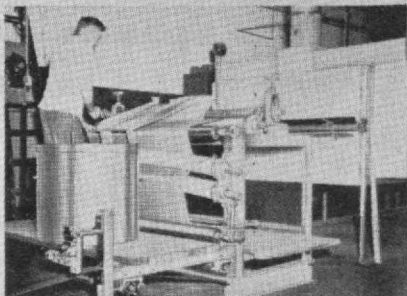
inexpensive drives available—Automatic; Variable Speed; and Mechanical (when explosion proof electrical requirements must be met).



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G. P. KNAPP, '35
F. W. PRESTON, '25
J. D. ROBERTSON, '16
J. D. ROBERTSON, JR., '52
R. N. VANDERWARKER, '31

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- Free Wheeling Expanders
- Vari-Bow Expanders
- Automatic and Push Button Bow and Skew Weft Straightening Equipment
- Non-Stop, Twist-Free Cloth Openers
- Precision Guiders
- Floating Roll Guides
- Salvage Uncurlers
- Continuous Roll Feeds
- Tension Controls
- Textometer (Moisture Control)
- Web Viewer
- Other Specialized Equipment

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- ☐ **Herbert J. Connington '42**
- ☐ **Alfred H. Hunter '48**
- ☐ **James R. Crowder '49**

Life, Science, and Inner Commitment (Concluded from page 70)

bring a similar much needed forthright restatement of the essence of faith, the removal of divisive trivia and human incrustations that offend both reason and spirit, and a seeking for broader understanding and worldwide communion. Such a consummation is devoutly desired and may be essential if the decades now upon us are to actuate nascent potentialities for new and richer fulfillment rather than degeneration to a new dark age begotten of knowledge and power but devoid of love and inner commitment.

Need for Personal Affirmation of Commitment

Lack of inner aim was identified by Professor Paul Tillich in his M.I.T. Centennial lecture as a salient factor in producing frustration, anxiety, and a sense of meaninglessness in Western culture at midcentury. Our genius for efficient production of means, though dedicated to no profound end, compounds the problem and fails to offer the ingredient that will ensure true freedom.

More deep-seated than is commonly realized is the concern for security—economic, military, and most of all ideological—as a necessary guarantee of freedom. Professor John Macmurray succinctly states in his provocative book *Conditions of Freedom*⁷:

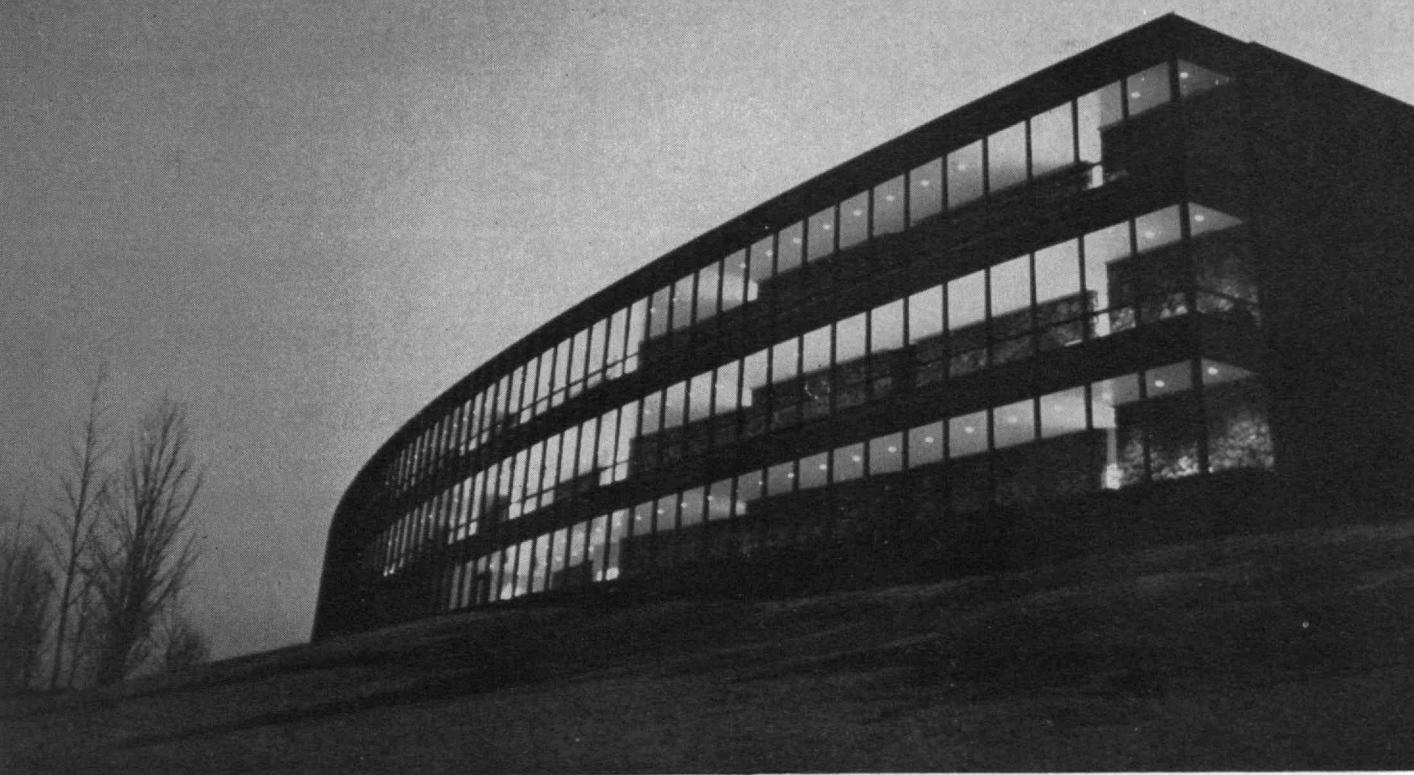
We flatter ourselves too much when we imagine we love freedom and strive wholeheartedly towards freedom. On the contrary; there are few things that we fear so much. No doubt we find the *idea* of freedom most attractive; but the reality is another matter. For to act freely is to take a decision and accept the consequences. . . . I see history, in its concrete reality, not as Man's struggle to win his freedom in a world that frustrates his efforts; but as a record of the twists and evasions by which men seek to escape from freedom in a world which thrusts it remorselessly upon them. . . . Here then is the paradox of freedom. We are free to choose between freedom and security. This choice is not voluntary nor is it once for all. It is compulsory and it is perpetually recurrent. . . . For the demand for security is the reflection of our fear; while freedom is the expression of our own reality. If we use our freedom to escape from freedom we frustrate ourselves; if we persist in this choice we destroy ourselves. . . . There is no security for us except in choosing freedom. For our insecurity *is* our fear, and to choose freedom is to triumph over fear.

To achieve true freedom, we should be willing to subject to critical scrutiny our deepest inner aims, to refine and distill them until their essence is so clear that we can with surety bespeak them to others, and, most importantly, install them as precepts along with other values that integrate and actuate our being.

To each of us as individuals comes the call for deep commitment to what we believe, to live at the level of the truth we know. May each of us be granted the needful wisdom to choose that better part that man cannot take away and that can give inner fulfillment and true freedom—freedom to mount the altar stairs of human destiny.

⁷ Macmurray, J., *Conditions of Freedom* (London: Faber and Faber Ltd., 1950).

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Individuals Noteworthy

(Continued from page 10)

Admissions Director

TO SUCCEED Professor B. Alden Thresher, '20, as Director of Admissions, M.I.T. has named Roland B. Greeley, Professor of Regional Planning.

Professor Thresher, who retired June 30 after serving 25 years in this post, built into the admissions process a scope that carries it far beyond the mere calculation of credits from preparatory schools.

Professor Greeley has been at the Institute for 16 years and has been chairman of the Faculty Advisers Council for the last two years. He hopes to continue to broaden the base for selecting entering students, and plans to emphasize various field programs designed to bring about a better understanding of M.I.T.

Military Awards

AWARDS for outstanding achievement were presented to 55 cadets and midshipmen at M.I.T. at the Military Day exercises on May 9.

Superior Cadet awards from the Department of the Army went to



Roland B. Greeley

Peter Buttner, '61; Oscar Orringer, '61; Arthur B. Krewinghaus, '63, and John P. Downie, '64.

The professor of Naval Science Award went to *Steven N. Goldstein, '61*. And the professor of Air Science Awards were to *Michael P. Feder, '61; Robert R. Barthelemy, '62; Kenneth L. Weyler, '63; and Edward L. Arnn, Jr., '64.*

Honors to Alumni

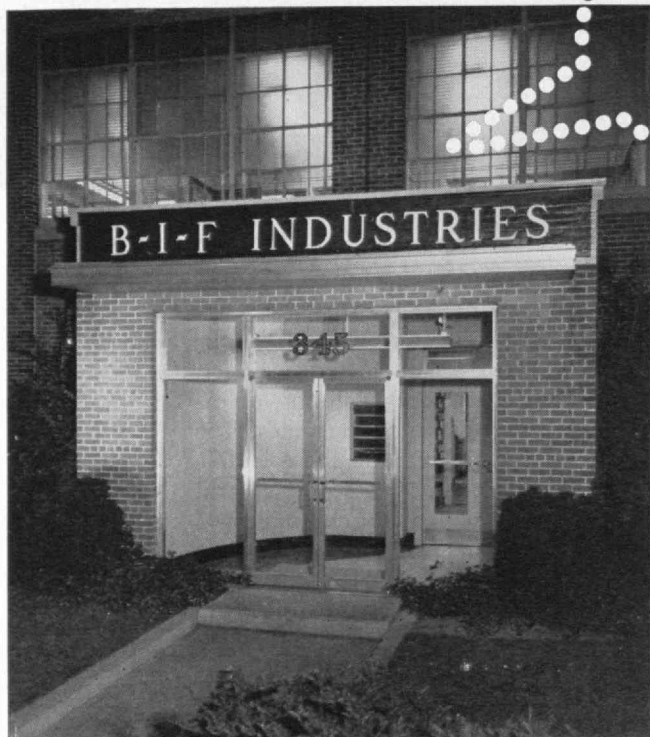
MEDALISTS and recent recipients of other distinctions include:

Thomas C. Desmond, '09, the Eloise Payne Luquer Medal, by the Garden Club of America . . . *Frederick H. Norton, '18*, the Design Division Award, by the American Ceramic Society . . . *Samuel Schenberg, '20*, the Honor Scroll Award, by the New York Chapter, American Institute of Chemists;

Barrett G. Hinds, '22, an honorary doctorate of laws, by Pepperdine College, Los Angeles . . . *R. George Rincliffe, '23*, the 1961 Award of the Philadelphia Public Relations Association . . . *John G. Trump, '33*, the 1961 Lamme Gold Medal, by the American Institute of Electrical Engineers;

William E. Leonhard, '40, the Newman Medal, by the Society of American Military Engineers . . . *Robert D. Cutkosky, '55*, the Silver Medal for Meritorious Service, by the U. S. Dept. of Commerce . . . *William R. Leitch, '56*, the Jesse H. Neal Editorial Achievement Award, by the Associated Business Publications.

(Continued on page 76)



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GRADUATES

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Calculator

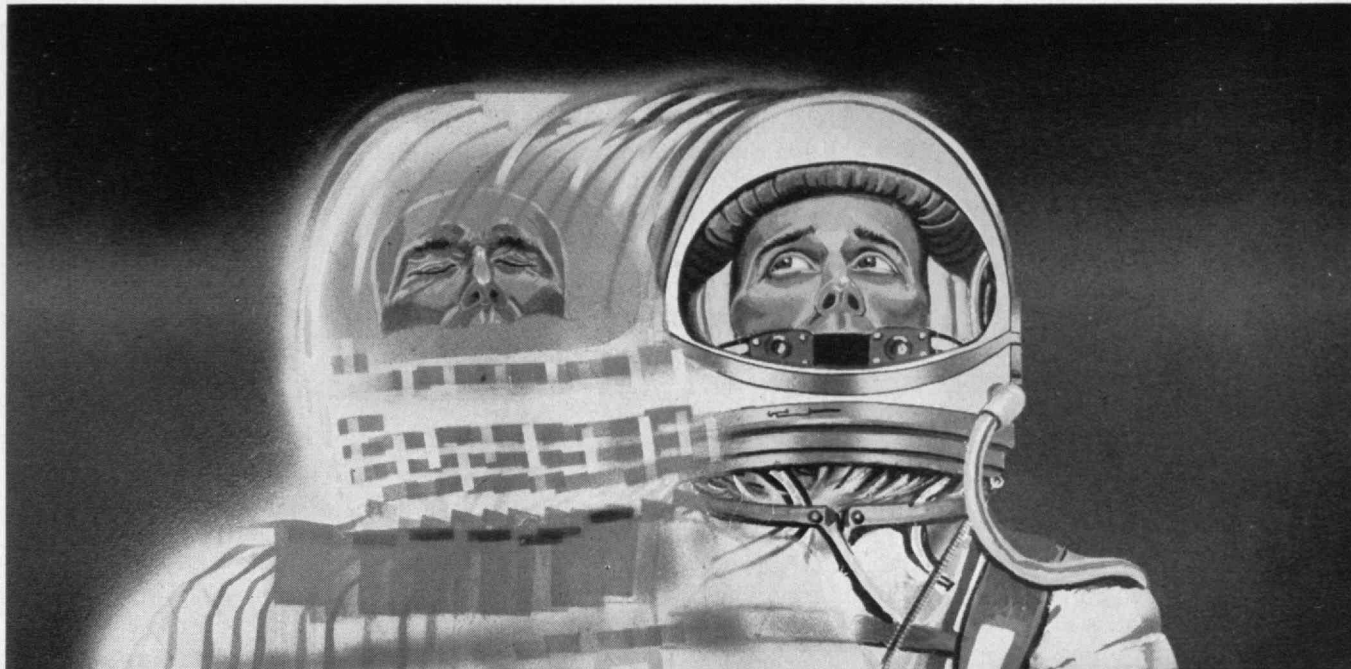
Winthrop W. Adams '33
Director Sales Development

Cornelius J. Wilson '35
Senior Systems Engineer

William L. Sammons '43
Vice President — Gen'l Sales Mgr.

Robert S. Buxton '45
Senior Systems Engineer

Daniel L. McGuinness, Jr. '50
Assistant to Product Manager



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NTL Conference Center
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Session I (6th annual program)
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Sessions I, II, and III (7th annual program)
October 29-November 10, 1961
January 21-February 2, 1962
March 18-30, 1962

Arden House
Columbia University's Harriman Campus
Harriman, New York

Individuals Noteworthy

(Continued from page 74)

Awards to Students

AT THE M.I.T. Student Awards Convocation on May 10, Compton awards were presented to Peter R. Gray, '61; Jerome H. Grossman, '61; Kenneth Kotovsky, '61; Arthur H. Rogers, Jr., '61; David L. Williams, '61; and Samuel J. Williamson, '61.

The Robert T. Haslam Cup went to John P. O'Connell, '61; the Blonder Tongue Foundation Award to Elwyn R. Berlekamp, '62; and the Kendall Company Award to Joseph Martins, '61.

The Outstanding Freshman Award was given to Allen J. Luebers, '64; and the Phi Lambda Upsilon Award in Freshman chemistry to Martin T. Poe, Jr., '64.

The Clifford Award went to Joseph R. Skendarian, '61; the Cochran Award to David W. Latham, '61; and the Q Club Award to Wayne R. Matson, '64.

The Athletic Manager of the year was Philip S. Schmidt, '62; and the athletic administration's awards went

to (gold) W. Henry Wagner, '61, Thomas G. Burns, '62, and Joseph R. Skendarian, '61; (silver) John F. Arens, '61, Richard U. Bayles, '63, Peter Buttner, '61, and James W. Kesler, '62; (certificates) Paul T. Robertson, '61, Richard B. Stein, '62, Peter E. Thurston, '62, and Philip S. Schmidt, '62.

In Physics Department

TO RELIEVE Professor Nathaniel H. Frank, '23, for a year, Professor William W. Buechner, '35, has been named acting head of the M.I.T. Department of Physics. Professor Frank expects to help develop the Institute's new Science Teaching Center.

Professor Buechner, an outstanding nuclear physicist, was associated for many years with Professor Robert J. Van de Graaff and formerly served as associate director of the High Voltage Laboratory.

Academy Fellows

THE American Academy of Arts and Sciences has elected Hudson Hoagland, '24, as its new president and Professor William P. Allis, '23, of M.I.T. as its vice-president for

mathematical and physical sciences. Newly elected fellows of the Academy include the following members of the M.I.T. Faculty: Stephen H. Crandall, '46, Peter Elias, '44, Rolf Eliassen, '32, Carl W. Garland, Edward N. Lorenz, '43, Frank A. McClintock, '42, Ithiel D. Pool, Paul N. Rosenstein-Rodan, Irving E. Segal, Joseph J. Snyder, '44, Patrick D. Wall, and John S. Waugh; also, Richard S. Leghorn, '39, of Itek Corporation.

In Food Technology

AS ITS CHAIRMAN, the Northeast Section of the Institute of Food Technologists has chosen Associate Professor John T. R. Nickerson, '32, of M.I.T., who was formerly chief chemist of the Birdseye Frozen Foods Corporation.

The Institute of Food Technologists was founded as a result of two international conferences at M.I.T. and its first president was Samuel C. Prescott, '94. The late Bernard E. Proctor, '23, and Samuel A. Goldblith, '40, and Ernest E. Lockhart, '34, were among Professor Nickerson's predecessors in office.

(Concluded on page 78)

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Gift Wrap
Special Trade Marks
Woodgrain Wallboards
Decorated Foils and Films
Transparentized Technical Papers

Individuals Noteworthy

(Concluded from page 76)

Faculty Notes

THE National Academy of Sciences has elected President *Julius A. Stratton*, '23, of M.I.T. to a four-year term as vice-president. . . . The National Council of Catholic Men has acclaimed Professor *John C. Sheehan* for intellectual leadership in the physical sciences. . . . The Hitchiner Manufacturing Company has elected Dean *Howard W. Johnson* of the School of Industrial Management to its board of directors. . . . The University of Chicago has conferred an honorary degree on *Paul A. Samuelson*, Professor of Economics. . . . Lawrence College has awarded an honorary LL.D. degree to M.I.T. Vice-President *James McCormack*, '37.

The U. S. Department of State has announced educational exchange grants to *Warren Ambrose*, Professor of Mathematics, to lecture in Brazil; to *Francis E. Low*, Professor of Physics, to conduct research in Rome; to *Malcom W. P. Strandberg*, '48, Professor of Phys-

ics, to lecture in France; and to *Roland D. Parks*, Associate Professor of Mineral Industry, to lecture in Egypt.

Luis de Florez Awards

M.I.T. STUDENTS receiving the Luis de Florez Awards for outstanding ingenuity in engineering this year were (in Aeronautics and Astronautics) *Brent W. Silver*, '61; *Earl U. Biven*, '61; and *David J. Coker*, '62, with *David C. Ives*, '62; and (in Mechanical Engineering) *William T. Brydges*, 3d, '62, with *Hugh A. Thompson*, '62; *Juan Emilio Maryssael*, '62; *Carl D. Andrysiak*, '61, with *Henry S. Averette*, '62; and *Hugh A. Thompson*, '62, with *David N. Wormley*, '62.

Senior Executives

THE M.I.T. School of Industrial Management's 10-week course for mature business executives this spring was taken by men from 13 states and three foreign nations. The men and the companies nominating them were:

Carl A. Ball, Jr., Southern Pacific Company; *Clarence J. Bryan*, Kingsport (Tenn.) Utilities, Inc.; *Robert E. Conary*, Texaco, Inc.;

Harry G. Crook, Westinghouse Electric Corporation; *Harold O. Flynn*, Chevrolet Motor Division, General Motors Corporation; *William C. Hayes*, Singer Manufacturing Company; *Friedrich W. A. Koenig*, Singer Nahmaschinenfabrik Karlsrule Aktiengesellschaft; *Billy J. Lancaster*, Atlantic Refining Company; *Karl F. Lang*, H. J. Heinz Company; *Patrick B. Lyons*, Western Electric Company, Inc.; *James G. McCurdy*, '48, Puget Sound Bridge and Dry Dock Company; *Ernest W. McNeil, Jr.*, Esso Standard Division of Humble Oil and Refining Company; *Orville H. Miller*, Scott Paper Company; *Pierre C. Monnoyer de Galland*, Office d'Exploitation des Transports Coloniaux; *James D. Neill*, Campbell Soup Company, Ltd.; *James C. Phelps*, Continental Pipe Line Company; *Loring W. Powell*, John Hancock Mutual Life Insurance Company; *John F. Probst*, South Bend Lathe, Inc.; *Leo R. Silliman*, Republic Steel Corporation; *Raymond Thompson*, Kennecott Copper Corporation; *Boyd R. Willett*, Standard Chemical Limited; and *Lloyd H. Wilson*, Lockheed Aircraft Corporation.

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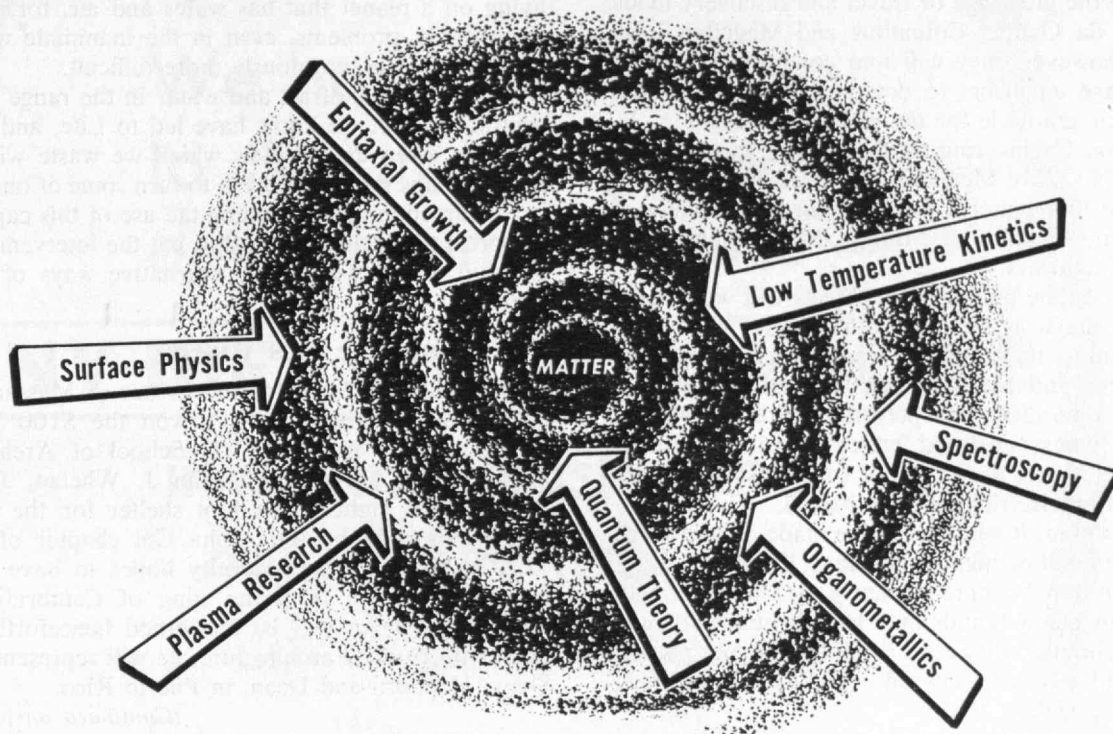
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Basic Ceramics	Millimeter Wave Research
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Cryogenics	Acoustics
Communication Research	Stellar Phenomenon
Data Processing Research	NMR
High Temperature Measurements	Solid State Physics
High Pressure Physics	Magnetohydrodynamics
Logic Connectives	Adaptive Programming
Mathematical Circuit Synthesis	Microbiology
Mathematics	Microwave Optics
Pattern Recognition	Enzymology
Physical Chemistry	Upper Atmosphere Physics
Organic Chemistry	Optics
Semiconductor Physics	Oceanography
Radiochemistry	Electromagnetics
Thin Film Physics	ESR
Inorganic Chemistry	Masers
Lasers	Biochemistry
Speech Compression	Biophysics
Infra-Red Research	Biology

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Trend of Affairs

(Continued from page 33)

Engineering on the Moon

WHEN men explore space, Professor A. M. Gaudin of M.I.T. thinks, they will feel young and dashing again, as they did "in the great age of travel and discovery made possible by da Gama, Columbus and Magellan." On the moon, however, they will find conditions that will both challenge engineers to devise new processes and heighten their gratitude for the earth's blessings.

"Separation Engineering on the Moon" was the subject of the Extractive Metallurgy address that Professor Gaudin gave this year for the Metallurgical Society of the American Institute of Mining, Metallurgical, and Petroleum Engineers.

On the moon, he pointed out, objects will weigh only one-sixth as much as here, the atmosphere will be extremely tenuous, the range of temperatures great, and oxygen, water and fuel will not be readily available. Hence many operations now performed on earth will not be possible unless enclosed under pressure. Without coal, oil, natural gas, waterfalls, or winds, the customary ways of making electricity will be barred.

If water is used, it will have to be made or imported, so its recovery will be highly important. Pneumatic gravity separation may be more attractive than water gravity separation, or heavy liquids may be substituted for water, since all liquids will cost a small fortune per pound. Electrical and magnetic separation techniques are likely to be more appealing, too.

The only place where the lunar environment appears more advantageous than terrestrial conditions to Professor Gaudin is in the refining of nonvolatile metals for which vacuum removal of impurities is mandatory. Solar heating of the melted metal, with appropriate stirring, he thinks, might provide a quality product.

"We are fortunate indeed," he concluded, "to be living on a planet that has water and air, for, without these fluids, problems, even in the inanimate world of metals, become enormously more difficult."

"The blessings of air and water in the range of concentrations that we know have led to Life, and that in turn has given us the fuels which we waste with such zest! Perhaps it is not too late to turn some of our efforts in the direction of husbanding the use of this capital for our great grandchildren, and to put the intervening time to good use in developing alternative ways of getting energy."

For Cambridge Bus Riders


A BUS STOP SHELTER for the corner of Massachusetts Avenue and Memorial Drive won the \$100 William Emerson Prize in the M.I.T. School of Architecture and Planning this spring. John J. Whelan, Jr., '61, designed the eight-by-ten foot shelter for the competition sponsored by the Alpha Chi chapter of Alpha Chi Omega, and the fraternity hopes to have it built to protect people from the sting of Cambridge winters. Mr. Whelan will be concerned henceforth, however, with tropical architecture; he will represent Perry, Shaw, Hepburn and Dean, in Puerto Rico.

(Continued on page 82)

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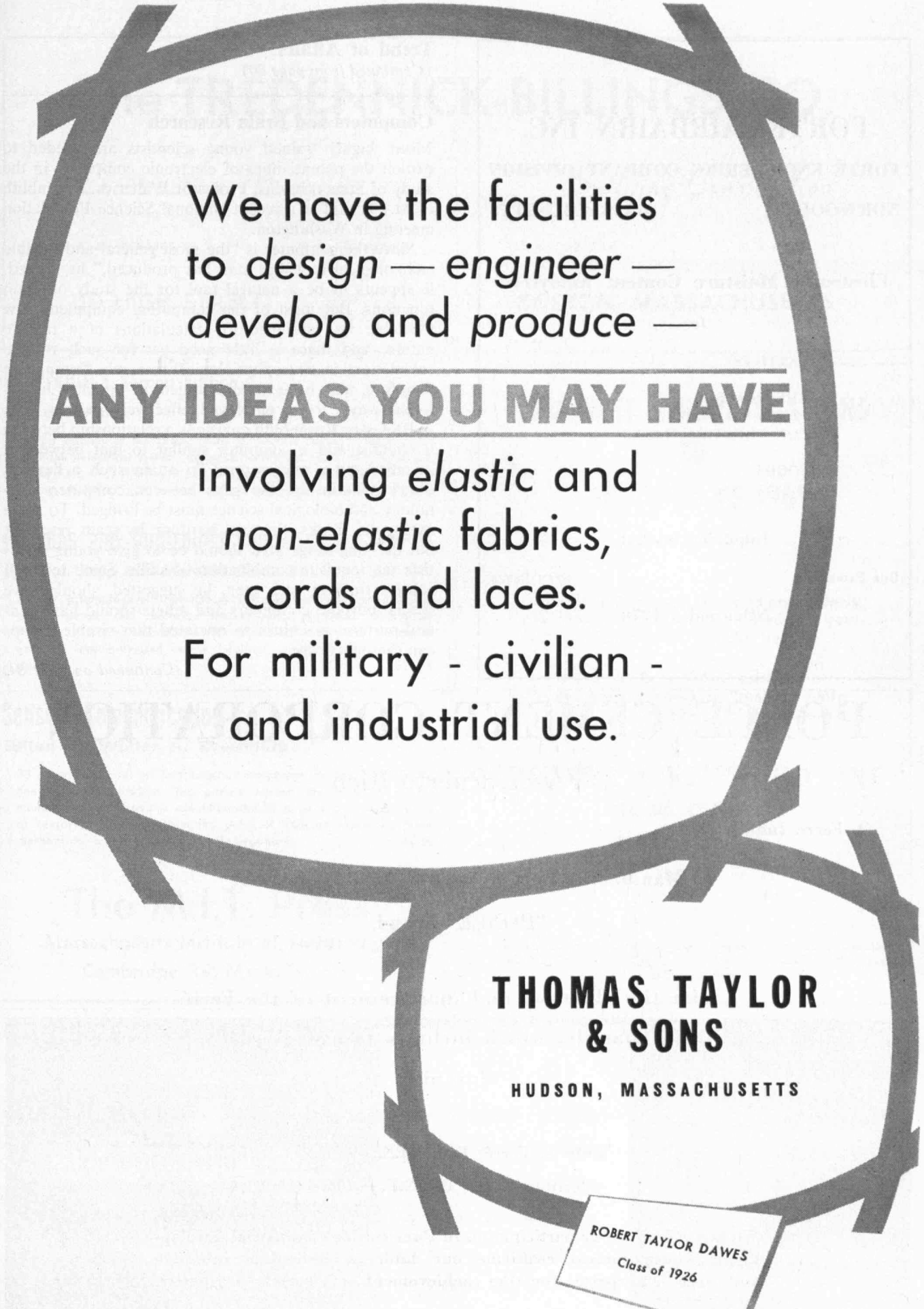
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Trend of Affairs

(Continued from page 80)

Computers and Brain Research

MORE highly trained young scientists are needed to exploit the potentialities of electronic computers in the study of human brains, Professor Walter A. Rosenblith of M.I.T. said at a recent National Science Foundation meeting in Washington.

Since the computer is "the most general and flexible technological tool that man has produced," he argued, it appears to be a natural tool for the study of brain functions. But most of the computing equipment now available was designed for calculations of a routine nature, and there is little need yet for such routine calculations in neurophysiological research. Computers, therefore, may have to be modified, or operated in different ways, to be employed effectively in this field.

Professor Rosenblith envisions a relationship between a scientist and a computer similar to that between a scientist and a microscope. To attain such a flexible, direct relationship, the gaps between computer technology and biological science must be bridged. To some extent, he thinks, this can be done by team research, but the long-range goal should be to give young scientists the requisite combination of skills. Some research centers training such men, he suggested, should have special purpose computers and others should have general-purpose machines so operated that sizable groups can share their use.

(Continued on page 84)

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Sensory Communication

Edited by Walter A. Rosenblith

38 papers given at an International Symposium on the Principles of Sensory Communication. The papers present the work of experimentalists whose findings are important to a general understanding of sensory mechanisms from the point of view of receptors, brain mechanisms, and behavior of whole organisms. \$16.00

The M.I.T. Press

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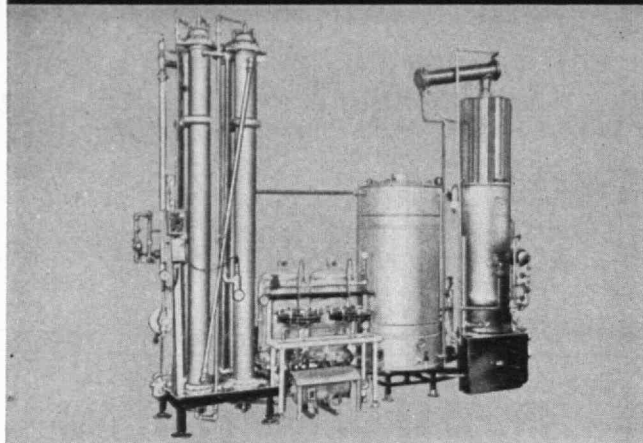
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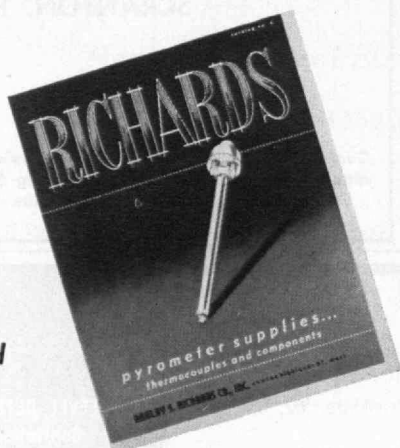
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Trend of Affairs

(Continued from page 82)

Lowell Diplomas Awarded

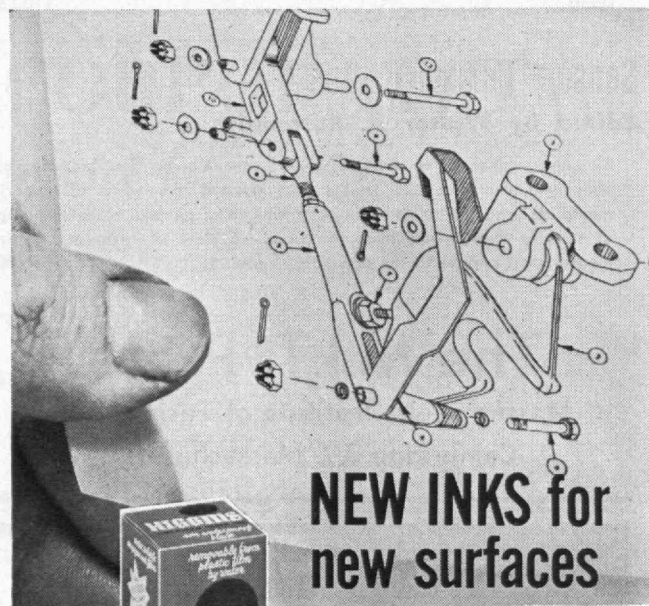
AT THE 57th graduation exercises of the Lowell Institute School on May 25 in Kresge Auditorium, 43 students were awarded diplomas for completion of the two-year course and 61 students were awarded 78 certificates for advanced courses.

Lawrence E. Beckley, '42, himself a Lowell graduate in 1938, was the principal speaker. Mr. Beckley is executive officer of the Aerospace Research Division, Department of Aeronautics and Astronautics at M.I.T. He encouraged the graduates to continue their studying and reading, and to keep up with the technical developments in their fields, so "that when that rare opportunity comes you will be able to make the most of it." He emphasized that the increased space effort may result in budgets for research and development even greater than those for actual production.

The Charles Francis Park Award to the outstanding Lowell Institute School graduate was presented to Robert Francis Lutz by Frederick M. Rasmussen of the Bethlehem Steel Company's Shipbuilding Division. Mr. Rasmussen received this award himself in 1935.

Professor Robert R. Shrock, Head of the Department of Geology and Geophysics, spoke on behalf of M.I.T., and Ralph Lowell, a member of the M.I.T. Corporation, presented the diplomas and certificates. Dr. F. L. Foster, '25, directs the Lowell Institute School.

(Concluded on page 86)



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Trend of Affairs

(Concluded from page 84)

Oceanographic Progress

TWO NEW DEVICES developed by William S. von Arx, '55, of the Woods Hole Oceanographic Institution staff, were tested by the research vessel *Chain* on a long cruise this spring, and both appeared to work with a high degree of accuracy. One is a navigation system which combines a powerful telescope with a gyro system for accurate star fixes even in daytime, and the other is a shipboard gravitometer which incorporates a steel ball settling slowly in heavy oil so that it is not affected by ship motion.

The *Chain* had two dozen scientists aboard, engaged in a great variety of studies. Some of them found strong evidence during this cruise of an Atlantic equatorial countercurrent, which appears to be a very complicated stream with characteristics similar to those of the Cromwell undercurrent located previously along the equator in the Pacific.

On the Biological Frontier

MOLECULAR BIOLOGY has already shown us a great deal about the mechanism of virus infection, and given us "a substantial insight into the nature of life itself," Alexander Rich, Associate Professor of Biophysics at M.I.T., told Voice of America listeners this summer.

His lecture on "Nucleic Acids and the Physical Basis of Inheritance" was one of a series broadcast to explain recent advances in the life sciences. The American Institute of Biological Sciences advised the Voice of America in planning these lectures and expects to publish the complete texts in book form this fall.

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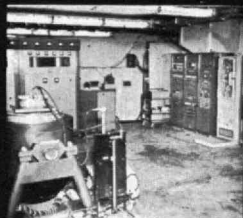
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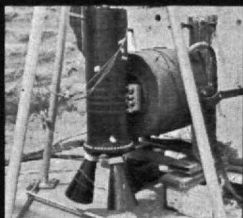
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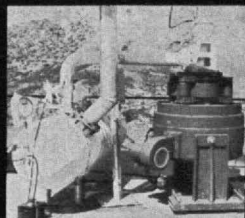
VIBRATION TESTING



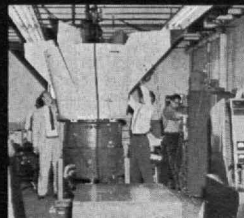
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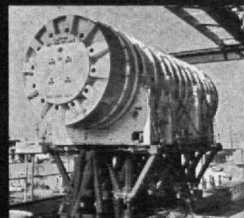
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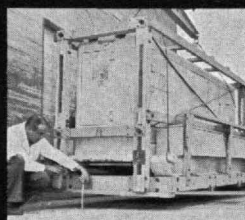
SHOCK TESTING



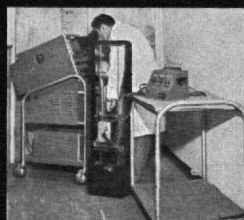
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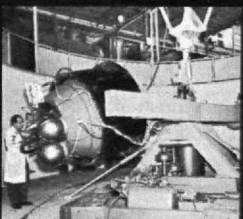


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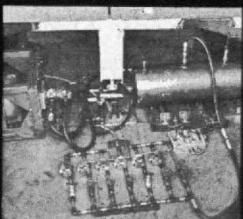


GSE pressure gauge

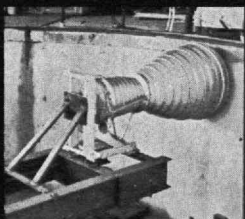
ACCELERATION TESTING



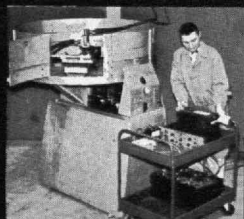
AGENA tankage system



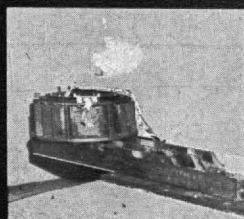
ICBM hydraulic pump



IRBM thrust chamber

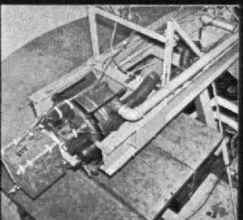


ICBM helium valve

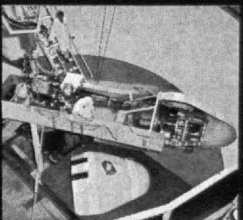


SCOUT recovery system

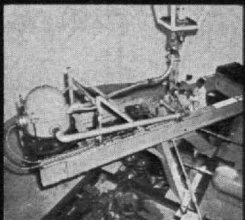
COMBINED TESTING



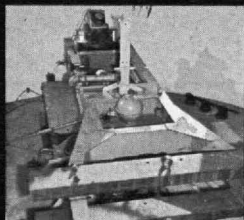
IRBM gas generator



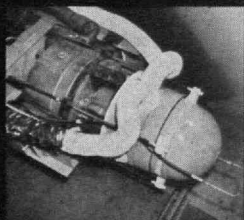
R&D telemetry system



ICBM helium regulator



IRBM thrust reverser



AEC special project

Largest testing company in the missile/aircraft field, Wyle offers unduplicated capabilities for tests involving the dynamic environments. These capabilities include: 16 vibration systems, up to 100,000 lbs force, sine wave and random; eight shock machines, including 3" and 6" Hyges; 5 centrifuges, up to 20' diameter; a combined 20-g-acceleration and 3500-lb-vibration machine; and, for simultaneous use with any of these, temperature, altitude, and/or humidity and/or full-scale functional operation of virtually any astronautic, airborne, or ground support component or sub-system.



WYLE

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Club Notes

Central Massachusetts Club Elects New Officers

The M.I.T. Club of Central Massachusetts held its fourth meeting of the season with a dinner at Valle's Steak House in Chestnut Hill, Mass., and moved on to Tech Night at the Pops at Symphony Hall in Boston.

The business of the evening revolved around the submission of a slate of officers for 1961-1962 by Nominating Committee Chairman Robert T. Dawes '26. The slate was proposed and railroaded in traditional fashion. Bob's slate won the unanimous approval of the quorum in attendance at the meeting: President, Arthur Lowery '32; Vice-president, Charles Burnham '43; Vice-president, James E. Haggett '47; Treasurer, Harry B. Duane '57; Secretary, Tom H. Farquhar '60; Assistant Secretary, Jose Canal '60. Executive Committee: G. R. Blake '39; R. H. Brown '22; R. T. Dawes '26; Bernard S. Falk '23; H. R. Gordon '38; R. H. Harris '48; H. J. Kahn '20; Arnold Kramer '52; Mac Levine '25; H. N. Thibault '49; E. P. Whitehead '20.—H. B. Duane '57, Secretary, 15 Algonquin Rd., Worcester, Mass.

Myron Cantor Heads Long Island Club

The Long Island Section's Annual Dinner and election of officers was held on April 21 at the Huntington Town House. According to tradition, the Long Islanders had an industry-sponsored cocktail hour. This year's sponsors were Republic Aviation, Sperry Gyroscope, and American Bosch Arma. "The Future Engineer" was described by speaker Augustus B. Kinzel '21, a member of the Corporation of M.I.T. Co-chairmen of the meeting were Myron Cantor '39 and "Doc" Doyle '34. Officers elected were: Chairman, Myron Cantor '39; Vice-chairman, Kenneth Lish '40; Secretary, Ted Henning '46; Directors, Jimmy Chen '46, Warren Obes '49, Bill Terry '43, and Doug Tooley '28.

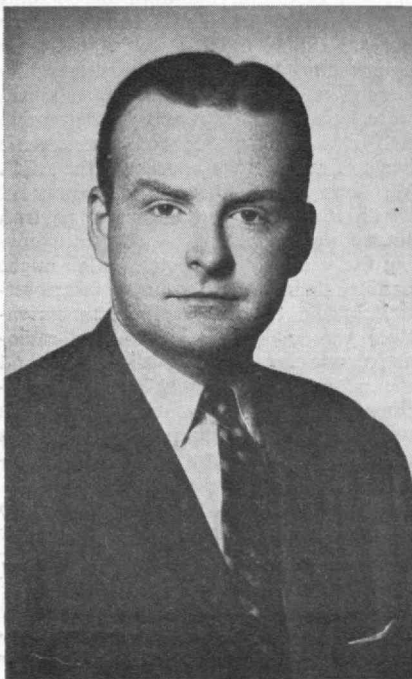
The Management Seminar, sponsored by the New York Club of M.I.T. since February, has heard some stimulating and informative talks by members of the M.I.T. School of Industrial Management, the most recent being those by Professor Billy Goetz on Production Management and Professor Eli Shapiro on Fiscal Policies, both in April, one on Marketing on May 2 and one on Labor Relations by Professor Stanley Jacks on May 16. Professor Edward Bowman was scheduled to speak on June 6 on Operations Research. Members interested in attending future meetings can obtain information from Bob Morgan '55, Oxford 7-1900.—Theodore W. Henning, '46, 24 Madison Park Gardens, Port Washington, Long Island, N. Y.

John R. Kirkpatrick Elected President of Chicago Club

Forty members of the Club met for luncheon at the Merchant's and Manufacturer's Club in Chicago's Merchandise Mart Wednesday, May 10, for the election of officers for the 1961-62 season, and for a trip through the headquarters of the mammoth Chicago Transit Authority (C.T.A.). This forthcoming season marks our 75th year. Organized in January, 1887, as the Northwestern Association of M.I.T., our club was the first M.I.T. Club (there are now 94) and had members in 18 states. Officers elected for the coming year are: John R. Kirkpatrick '48, President; John H. Wills '26, Vice-president; Warren J. Meyers '41, Secretary; E. Charlton Crocker '43, Treasurer; Edgar F. Seifert '19, Past President; and six Directors; Bransford W. Crenshaw '24, Joseph E. Dietzgen '41, John I. Herlihy '39, William A. Murphy '39, John K. Reddersen '47, and Rouholah Zargarpur '46.

After lunch Mr. Virgil Gunlock, noted chairman of the Chicago Transit Authority, addressed the group and conducted us through the C.T.A. operations center in the Mart. C.T.A. operates 2000 miles of system, 3200 buses, and 1200 electric cars twice daily with the services of 13,000 employees; 82 per cent of all Chicago area transportation to the central area, or two million people daily, are moved by their system. C.T.A. is the first transportation company to use two-way radios on their vehicles, and the first to use automatic supervision of buses by radio-telephone circuit to a computer unit.

Donald Severance '38, Secretary of the Alumni Association, gave a brief account of the objectives and progress of the Second Century Fund.—Warren J. Meyers '41, Secretary, 4220 West Belmont Avenue, Chicago, Ill.



John R. Kirkpatrick, '48, will head the Chicago M.I.T. Club next year.

Japan Association Gets Review of Centennial Events

Mr. Robert Tonon '22 found himself in Tokyo during the "Golden Week." This week is studded with holidays such as the Emperor's birthday (April 29), Sunday (30th), Constitution Day (May 3), Boy's Day (May 5), and finally Sunday (May 7). As you see, the usual business is expected at stand-still during this week. For Mr. Tonon, Mr. Yoshinori Chatani '22, arranged a very exquisite lunch at a restaurant called Kazuo (a famous actor's given name), where Mr. Eisenhower would have dined during his visit. We talked with Mr. Tonon together from noon until 5:45 P.M., when he had another engagement. He was so thoughtful as to bring the Centennial program, Dr. Bush's essay, and the special edition of the Boston Globe.

It was very kind of the Alumni Association to have arranged for Mr. Clinton Conway '24, to bring with him a copy on magnetic tape of Dr. Killian's principal address during the M.I.T. Centennial Celebration. We shall participate in the atmosphere of our alma mater on to the greater Second Century. It may be mentioned that our association presented the national flag to the Undergraduate Association for their program.

I wish to report that LCDR W. F. Searle, Jr. '52, of the U.S. Navy came to Tokyo again with a short notice, but Mr. Chatani, Mr. Yoshio Kubota '23, and I spent a very pleasant evening together with him. Mr. A. A. Archibald '28, of Jones and Laughlin Steel Corporation could spend a few hours with Mr. Chatani and myself before his departure.—Shikao Ikehara '28, President, M.I.T. Association of Japan, Tokyo Institute of Technology, Oh-Okayama Meguro-Ku, Tokyo, Japan.

Central Pennsylvania Club Holds Second Fund Dinner

On March 29, at the Penn Harris Hotel in Harrisburg, the second dinner meeting the area of the Second Century Fund took place. Local M.I.T. Alumni were again guests of U. A. Whittaker, President of AMP, Inc., Harrisburg. The following members of the Second Century Fund Committee were present with their guests: George J. Meyers, Jr. '29, Reading Area, with guests Charles F. Springer '52, J. F. Chapin '38, and Otto Putnam '33; John P. Connelly '28, York Area, with guests Weston W. Goodnow '46 and Karl E. Katz '50; Robert K. Peterson '48, Andrew R. Brugnani '26, and Marshall M. Holcombe '36, Harrisburg Area, with guests Francis E. Thomas '17, Col. Charles M. Steese, Jr. '53, John A. Morefield, Jr. '56, Samuel I. Zack '22, and Dr. Franklin H. Wells '18; Robert K. Hess, Philadelphia District Director of the Second Century Fund.

A film depicting life at M.I.T. was again shown for the benefit of those who had not attended the first meeting.—Robert K. Peterson '48, Secretary-Treasurer, 566 Brentwater Road, Camp Hill, Pa.

Fairfield County Club Airs World Problems

The M.I.T. Club of Fairfield County held a well attended dinner meeting at the Clam Box in Westport on May 3. Gil Mott '37, Clint Springer '45, and Professor Emeritus Theodore Smith spoke briefly on plans for the Second Century Fund. Principal speaker was Dr. Norman J. Padelford, Professor of Political Science at the Institute. Dr. Padelford discussed the international conference held at the recent M.I.T. Centennial Convocation and some of the many problems facing the United Nations now and in the coming years.—Randall Goff, '51, Secretary, Goodhill Road, Weston, Conn.

Cryogenics Explained At Rocky Mountain Club

The snow-covered peaks of the front range of the Colorado Rockies as viewed from the 14th floor of the Petroleum Club provided the perfect backdrop for Professor S. C. Collins' talk on cryogenics to the Rocky Mountain M.I.T. Club. Sixty-four members and wives joined together for the spring meeting May 9. Maxwell Parshall '28, and Robert D. Haberstroh '51, both teaching at Colorado State University, came the longest distance for the affair. John R. Uglum '60, of Longmont was the newest member, balanced by Rudolph H. Fox '12, our eldest statesman. After the roast beef dinner Samuel W. Welch '26, President, introduced Charles E. Brokaw '22, who reported that the largest group of freshman ever to come from the Rocky Mountain area will enter Tech next fall. Joseph S. Bowman '41, reported on the progress of the Second Century Fund in the area and Andrew R. Pfeifferberger '49, was introduced as chairman of the Special Gifts Division. He will be working along with Joe.

Bascom W. Birmingham '48, assistant chief of the Engineering Division of the Bureau of Standards, introduced the speaker of the evening. Dr. S. C. Collins graphically explained how a thirsty farm-boy can rise to cryogenic greatness. All present both rose and froze as Dr. Collins masterfully continued our M.I.T. education.—Benjamin A. Oxnard '25, Secretary, P. O. Box 5308 Terminal Annex, Denver 17, Colo.; Barnard Silver '56, Assistant Secretary, 315 Clermont Street, Denver 20, Colo.

Club's Past Presidents Travel to Europe and Korea

Spring finds the New York Club becoming international with several globe-trotting members heard from around the world. Dave Gushee '50, editor for *Chemical and Engineering News*, has been transferred to manage the London office of this weekly organ for the American Chemical Society. Past presidents of the Club, Thomas D'Arcy Brophy '16, Eugene Smoley '19, and Edward Edgar '35, have traveled in Korea and parts of the European Continent.

Tending the farm back home, some of the relatively younger members have been making strides. Hugo Wikstrom '50, has been named director of another firm, International Pressure Instruments, Ltd., and Richard Linde '53, has been named vice-president of C. F. C. Funding, Inc., New York City. Harry K. White '99, has been lending his glistening presence to the Club at luncheons recently, as have Greg Dexter '08, and Dix Proctor '17, three of our young-at-heart members.

Ken Finlayson '35, has moved from Bechtel Corporation to Scientific Design, and G. Peter Grant '35, has moved from Cleveland to the Anso Division of General Aniline & Film Corporation in Binghamton, N. Y. Out-of-towners enjoying luncheon at the Club have included E. Drake '59, of California and Eli Grossman '36, of Barrington, R. I.

Tom Carmody '44, has been appointed sales manager of the Union Carbide Olefin Company, a division of Union Carbide Corporation; and Frank R. Milliken '34, formerly Executive Vice-president of Kennecott Copper Corporation, has been named president. Chairman of this year's Annual Meeting in New York is Malcolm Fleming '33.—James M. Margolis '52, Secretary, 5 Fenton Street, Rye, N. Y.

Miami Valley Club Tours AEC Laboratory

For its May meeting, the M.I.T. Club of Miami Valley toured the Miamisburg Mound Laboratories, which is an AEC-sponsored research, development, and production facility operated by the Monsanto Research Corporation. Projects at this location range from the fabrication of nuclear and high-explosive devices to the measurement of physical properties of nuclear materials for civilian power reactor projects. The tour included inspection of the thermal-diffusion columns used to separate helium-3 from ordinary helium. Following this, we visited their calorimetry lab, where units sensitive enough to measure an ant's metabolism were being used routinely to determine half-lives, heats of reaction, and specific heats of materials of interest to the AEC. We were briefly shown the manner in which the beryllium-plutonium neutron source was constructed, and then, showing the variety of projects this lab might handle, their work on a new thermosetting plastic (a diallyl phthalate derivative) was explained. Methods of radioactive monitoring were discussed, and the necessarily elaborate safety precautions pointed out. To finish the tour we were shown the equipment and facilities used with high-temperature reactor materials.

D. M. Scott '55, was one of the two guides for the tour. Attending the tour were: W. T. Adams '21; W. T. Walther '50; C. S. Huebner '60; G. D. Gardner '53; W. H. Hagenburch '40; Adam Altglass '35; R. M. Courtney '52; L. L. Custer '13; E. E. Barney '42; R. O. Dehlendorf '24; R. E. Segal '48; W. G. Mackey '51; M. J. Gibbons '06; and D. F. Moyer '46.—James B. McNeely '57, Secretary, P. O. Box 402, Bellbrook, Ohio.

Puget Sound Club Celebrates Centennial in Seattle

Over 100 Alumni, wives and friends of the M.I.T. Club of Puget Sound attended their own junior-size Centennial Celebration with a dinner meeting Monday, April 17, at the Harbor Club, one of Seattle's newest and finest clubs.

Arnold Gagnes '46, President of the Club, introduced three distinguished guest speakers. Two of the speakers were M.I.T. professors, Dr. Norman J. Padelford, one of the Institute's Professors of Political Science, and Dr. Bernard Gould '32, Associate Professor of Biochemistry. The third speaker was Gregory Smith '30, President of Eastman Gelatin and national Vice-chairman of the Second Century Fund area organization.

Professor Padelford, a descendant of one of Seattle's pioneer families, spoke of M.I.T.'s role in international affairs and the challenge facing the United Nations in the '60's.

Professor Gould spoke of the "trail-blazing" in biochemistry at the Institute and the challenge ahead in this dynamic field.

Among the many prominent local members in attendance were Horace W. McCurdy '22, Honorary Chairman, and James W. Barton '39, Chairman of the Second Century Fund for the Puget Sound area.—William J. Sullivan '51, Secretary, 646 S.W. 145 Street, Seattle, Wash.

Northern California Club Hears Professor Padelford

The M.I.T. Club of Northern California met jointly with the World Affairs Council of San Francisco on Thursday evening, April 20, amidst the splendor of a panoramic view of the San Francisco Bay at the World Trade Club, the hub of international activities in San Francisco. The meeting featured a superb roast beef dinner and an enlightening talk on the United Nations by an expert on the subject, Professor Norman J. Padelford of the M.I.T. Department of Economics and Social Science. Professor Padelford highlighted the recent developments in Cuba and gave his views on admission of Communist China to the United Nations. Dr. Padelford was introduced by Professor Peter Odegard, Chairman of the Department of Political Science at the University of California.

This meeting was planned jointly with the World Affairs Council by M.I.T. Club members headed by Dr. Lionel Galstaun '34. Presiding jointly over the dinner were Gaynor Langsdorf '32, and Alvin Rockwell, President of the Council. A total attendance of 244 was counted, about 164 representing the M.I.T. Club.

The next meeting may include a talk by Dr. Stark Draper '26, Chairman of the Department of Aeronautics and Astronautics at M.I.T., who was one of *Time* Magazine's Men of Science for 1961.—Roger Borovoy '56, Assistant Secretary, 30 Ord Court, San Francisco 14, Calif.; Martin Robbins '56, Secretary, 502 Greenwich, San Francisco, Calif.

Oklahoma Alumni Entertain Strattons and Dean Belluschi

The M.I.T. Club of Oklahoma has had an especially successful winter season, highlighted by visits from President and Mrs. Julius A. Stratton '23, and Dean Pietro Belluschi of M.I.T.'s School of Architecture and Planning.

Dr. and Mrs. Stratton were received by Alumni and wives at a luncheon meeting at the Oklahoma City Petroleum Club on January 26. President Stratton addressed the group on the changes and growth that are taking place at M.I.T., in curricula and in new buildings planned or under construction. He gave a progress report on the Second Century Fund, and touched on the Educational Counselor's task with secondary school students, with special regard to College Board examinations.

Dr. Stratton paid tribute to the Great Plan whereby Oklahomans gave \$2,500,000 to Oklahoma City University to raise the standards of education in the School of Science. In this unique arrangement, M.I.T. was selected as the institution that would provide personnel, course and subject matter, and give guidance where needed. Other areas in the world might be interested in establishing similar programs to help small schools develop more rapidly.

After the talk, President Stratton answered many questions from those present, who included the following members of the Oklahoma Alumni group: George W. Aderhold '36, Rex M. Ball '58 and Mrs. Ball, Robert H. Burns '46, Paul A. Cushman '11 and Mrs. Cushman, John P. Dowds '51 and Mrs. Dowds, Thomas E. Garrard '28, Robert B. Gow '34, Ben E. Groenewold '25 and Mrs. Groenewold, Donal K. Holway '47 and Mrs. Holway, Louise Jordan '31, Jack R. Kalman '31 and Mrs. Kalman, Herbert Kent, M.D. '49, Breene M. Kerr '51 and Mrs. Kerr, Bruce Kirton '44, R. Bruce Miller '56 and Mrs. Miller, Roy L. Seikel '47 and Mrs. Seikel, William J. Sherry '21 and Mrs. Sherry, Charles B. Stuart '34 and Mrs. Stuart, Robert W. Vahlberg '37 and Mrs. Vahlberg, J. Kenneth Watson '55 and Mrs. Watson, Ed C. Young '46 and Mrs. Young.

That evening, after dinner at the home of Dean A. McGee, president of Kerr-McGee Oil Industries, Inc., Dr. Stratton spoke to a large group of distinguished business, industrial, educational and political leaders in the State of Oklahoma. He emphasized the national and international responsibilities of the Institute, and the part M.I.T. will play in the future. Phil Peters '37, of Boston, who accompanied the Strattons on their trip to the Southwest, spoke briefly on the Second Century Fund and the needs of M.I.T.

Next on our winter agenda was a stop-over by Dean Pietro Belluschi, en route from Honolulu to Cambridge, to make a professional call at Oklahoma City University concerning the design of a new chapel for the campus. On Sunday noon, February 26, Mr. and Mrs. Charles B. Stuart had a brunch for Alumni and other guests at their elegant and spacious new home in Nichols Hills to honor Dr.

Belluschi. The day was warm and sunny despite the date, and brunch was served in the patio by the pool. Alumni who attended the affair were: Mr. and Mrs. Guy Arnold '30, Mr. and Mrs. Rex Ball, Robert Burns, Mr. and Mrs. Jack Kalman, Mrs. Breene Kerr, Mr. and Mrs. John Reid '50, Dr. and Mrs. Herbert Kent, Mr. and Mrs. J. Kenneth Watson, and Mr. and Mrs. Robert Gow. Special guests included prominent architects, President and Mrs. Jack Wilkes of Oklahoma City University, and others.—John P. Dowds '51, Vice-president; Howard Grekel '47, Secretary-Treasurer, Route 1, Box 540, Claremore, Okla.

Dean Burchard Speaks On City of the Future

In observance of the 100th Anniversary of the Institute, the M.I.T. Club of the Lehigh Valley held a dinner meeting at which Dean John E. Burchard '23, of the School of Humanities and Social Science at M.I.T., was the principal speaker on May 4 at the Club in Allentown. Dean Burchard addressed a gathering of 112, which included 40 Alumni, wives, and invited guests from educational institutions and industries in the vicinity.

M. Arnold Copeland '40, President, first introduced guests representing Cedar Crest, Lafayette, Muhlenberg and Moravian Colleges, and Lehigh University. G. Whittier Spaulding '21, member of the committee which planned the Club's observance of the M.I.T. Centennial, then introduced the speaker. In his opening remarks Dean Burchard described the recent Centennial Convocation at Cambridge, Mass., in particular the Educational Conferences. He also mentioned the unusual opportunity realized in the two M.I.T. television presentations during the past few months and some of the interesting production problems, including that of retaining spontaneity on a filmed broadcast.

Dean Burchard's talk on the subject "Metropolis 1980" was well chosen to alert our guests, many of them leaders in community life, to the contributions that technology can make through the social sciences. By planning, the expansion of cities such as those in our own area, some of which are currently involved in redevelopment programs, can take place without fragmentation into peripheral settlements having no cultural or other contact with the central core. To retain and enhance the beauty inherent in the diverse character of each city, the planners must "rehabilitate" as well as "bulldoze and rebuild" and must be prepared for political effort and financial sacrifice. It is hoped that those in charge of our local redevelopment are in touch with the concepts expressed by Dean Burchard. The success of nearby Philadelphia, selected for contrast to Brasilia in the recent M.I.T. television presentation, in incorporating both public transport and automobiles in their present development plans was mentioned as an encouraging example.—William V. Bassett '39, Secretary, 510 Delaware Avenue, Bethlehem, Pa.

Southern California Club Salutes Second Century Fund

Our May 16 meeting was held as our salute to the Second Century program of M.I.T. Professor Lawrence B. Anderson, head of the Department of Architecture at M.I.T., was the main speaker, and the Southern California Chapter of American Institute of Architects and students of the University of Southern California School of Architecture were also invited. As this goes to press early in May, we are eagerly looking forward to another of George Cunningham's programs.

The Second Century Fund Area Co-Chairmen, John Flanigan '44, and Charles H. Toll, Jr., '23, are really getting into gear. Over 200 Alumni are already committed to help and more will be recruited. We have about 2,000 Alumni to contact, and we intend to do a bang-up job. Appointed by John and Charlie as chairmen of the five main Los Angeles sub-division areas are Samuel E. Lunden '21, Richard S. De Wolfe '36, Donald W. Randolph '21, C. William Guy '39, Frank S. Wyle '41, Gates W. Burrows '25, and George Piness, Jr. '49—Albert A. Levingston '49, Secretary, 3850 Wilshire Boulevard, Los Angeles 5, Calif.; Richard J. Steele '46, Assistant Secretary, 15519 Talbot Drive, La Mirada, Calif.

Deaths

LILLY MILLER KENDALL '92, April 10*
JOHN J. HOLLISTER '94, May 4
LUTHER K. YODER '95, May 12*
EDWARD C. SHERMAN '98, Feb. 28*
JAMES B. ELLERY '99, May 14*
WILLIAM S. HART '00, April 14*
LAWRENCE W. JENKINS '00, April 20*
ARTHUR C. MELCHER '00, May 14*
CHARLES E. PAUL '00, May 14*
GEORGE D. HALL '01, Feb. 25
CHARLES H. SISSON '02, March 19*
HERMAN J. CASS '03, April 12*
HAROLD M. LEH '04, April 28
BIRCHARD F. MINER '04, Dec. 18, 1959
FLOID M. FULLER '06, April 20*
HERBERT J. MANN '06, April 19*
HENRY H. DAMON '08, May 10*
FLOYD J. PITCHER '10, April 11*
MUNROE R. PEVEAR '11, Nov. 30, 1960*
GEORGE A. LITCHFIELD '13, April 29*
HAROLD M. RAND '13, April 26*
ALBERT J. HAHN '14, Feb. 25*
STANLEY E. STOREY '14, Nov. 5, 1959*
HAROLD G. STORKE '14, April 28*
MALCOLM THOMSON '15, May 4
ARTHUR R. KELLER '16, April 8*
HARVEY C. STOCKING '16, April 29*
RUSSELL H. WHEATLEY '17, April 19*
WILLIAM M.B. LORD '18, March 9*
EDWARD M. BRICKETT '20, April 15*
GEORGE H. HOPKINS '20, April 18*
KENNETH B. SKARDON '21, Jan. 14*
FRANCIS A. BARRETT '24, May 13*
STUART P. MEAD '24, no date given
JAMES T. ADAMS '25, March 1960*
DWIGHT H. MARSH '25, April 20*
BROWN V. VOORHEES '27, March 15
EDWARD V. DOCKWEILER '29, March 30*
THOMAS F. WIECZOREK '30, Sept. 14, 1960

*Further information in Class Notes

Class Notes

'81

The April issue of *International Nickel's* "Corrosion Reporter," in discussing some of the beginnings of the petroleum industry in the U.S. and Russia, included a note of interest to M.I.T. Alumni. It said that the 1899 issue of the *Journal of the Society of Chemical Industry* recorded the fact that "a young man named **Godfrey L. Cabot** of Boston had just been accepted as a new member by the Society of Chemical Industry. This young man was born in 1861, only two years after the first oil well was drilled in the U.S. In 1881 he graduated from M.I.T. with a great interest in the rising oil industry, then dominated by Russia. Cabot went on to found and develop a great American organization for manufacture of carbon black, natural gas and gasoline, oil field equipment, well-drilling and related operations. He did much to alter the restricted conditions described by Mendeleeff long years ago.

"At the present writing," the article continued, "Godfrey L. Cabot of Boston is preparing to celebrate his 100th birthday. And M.I.T. is preparing to rejoice in the only centenarian on its Alumni Association Honor Roll as it celebrates its own 100th Anniversary."

'92

It is my sad duty to report the passing on of another classmate, Mrs. **Lilly M. Kendall**, who died at her home in Belmont on April 10. The secretary is indebted to the Belmont Citizen for the following account of her career: "Mrs. Kendall was born in Charlestown, a daughter of Horace Buchanan and Rosette Darling Miller, in 1869. She married Mr. Kendall in 1900 and came to Belmont where she has lived ever since. She was a member of the First Church in Belmont, Unitarian, and was for many years active in church affairs. Mrs. Kendall was a graduate of Massachusetts Institute of Technology, Chemistry Department, Class of 1892. For several years she was employed by the State Department of Inland Waterways as an assistant to Mrs. Ellen Richards and Professor Drown in conducting water analyses. That work was carried on from 1892 to 1899 at the Institute and then moved to the State House. Mrs. Kendall is survived by a cousin, Katherine S. Burrows, wife of O. Mason Burrows of Holden; Mrs. Ella Kendall Cummings of Woburn; Harrison S. Kendall of Florida; Mrs. Helen Kendall Miller and Willard S. Kendall, both of Waltham. The Rev. Arthur H. Tripp officiated at funeral services held Wednesday afternoon at the

Kendall residence. Interment was in the family lot in Belmont Cemetery."—**Charles E. Fuller**, Secretary, P. O. Box 144, Wellesley 81, Mass.

'95

These are the last of our Class Notes for Volume 63 of *The Review*. Volume 64 begins November 1. The last day for us to deliver notes for November will be September 15, as notes for each number have to be in *The Review* office a month and one-half before each number is printed. If you know of anything concerning our classmates, please send to us press clippings, etc., and your comments together with notes about yourself, your past and present daily life. Our class has printed only two books, our "Decennial Catalogue 1905," a paper pamphlet of 120 pages, and our bound 200-page "M.I.T. '95-25th Anniversary of the Class" in 1920. That was 41 years ago. Much has happened in our work, daily lives, travels, and accomplishments.

John Dyer, IV, listed for years as "retired at 636 Morris Street, Albany, N.Y.," is another of our long lost sheep who has left no forwarding address. . . . We had a pleasant chat with **C. Willard Bigelow** at his winter home, 23 Elm Street, Brookline, Mass. He seemed to be in good health and looking forward to being at his summer home, Ned's Point Road, Mattapoisett, Mass., where Willard enjoys a bit of physical exercise now and then by chopping down a tree. . . . **Luther Conant**, 46 Shepard Street, Cambridge 38,

Happy Birthday

Congratulations are in order during July, August and September for four Alumni who will celebrate 95th anniversaries; and to 7, 19, and 30 Alumni who will turn, respectively, 90, 85, and 80, as listed below with dates of birth.

August, 1866—**ROBERT T. PAINE** '87, on the 9th, and **EDWARD J. BEACH** '89, on the 11th.

September, 1866—**GEORGE B. DE GERSDORFF** '92, on the 1st, and **IDA S. RIPLEY** '93, on the 22nd.

August, 1871—**HERBERT D. NEWELL** '96, on the 6th; **BUTLER AMES** '96, on the 22nd; and **CHARLES A. BOLLES** '97, on the 27th.

September, 1871—**SAMUEL T. SMETTERS** '96, on the 12th; **EDITH WHEELER RIPLEY** '05, on the 24th; and **HOWARD R. BARTON** '94, and **CHARLES M. SPOFFORD** '93, on the 28th.

July, 1876—**EDGAR C. BOWEN, JR.** '97, on the 2nd; **WARREN A. PRIEST** '99, on the 4th; **CHRISTINA H. GARRETT** '99, and **ARTHUR W. HUSE** '98, on the 5th; **FREDERICK L. W. RICHARDSON** '04, on the 10th, and **HAROLD W. BEDER** '99, on the 23rd.

August, 1876—**GORHAM P. STEVENS** '98, on the 14th; **NORMAN P. ROOD** '99, on the 15th; **IRA M. CHACE, JR.** '98, on the 18th; **KATHERINE DEXTER MCCORMICK** '04, on the 27th.

September, 1876—**FREDERICK W. GROVER** '99, on the 3rd; **JOHN M. HIGGINS** '00, on the 7th; **FLORENCE MERRILL**

Mass., although confined to the house as usual, takes an active interest in the daily news, writing, and telephone talks.

Right now, as this is going to press, we are sorry to have to report the passing of our much appreciated and long time friend, **Luther K. Yoder**, who left us May 12 after some weeks in the hospital. Further details will come in our next report. —**Andrew D. Fuller**, Assistant Secretary, 120 Tremont Street, Boston, Mass.

'96

After the Centennial Celebration was concluded, a rereading of "When M.I.T. was Boston Tech," by Professor Prescott '94, was more interesting than ever. In many of the events described, our class was intensely concerned. The part that President John D. Runkle took in that era recalled his class in math which one always entered with the thought that this would be a pleasant hour. Here in Brookline the Runkle School, after several years of controversy, is to be razed, and a new million-dollar one erected on the same site. In this town, Runkle started a summer carpentry school, from which developed manual training.

Mrs. **Henry Waterman** has asked if any classmate of Henry's is interested in the 1896 Class Book, M.I.T. Alumni Register 1948, and "When M.I.T. was Boston Tech" by Samuel C. Prescott. Henry A. Waterman died October 25, 1955 and left \$600,000 to Tech for scholarships. Mrs. Waterman writes from 34 Chestnut

FEATHERSTON '06, and **ARTHUR B. WHITE** '00, on the 10th; **STANLEY G. H. FITCH** '00, on the 13th; **PHILIP S. BAKER** '01, on the 27th; and **CONSTANT HUNTINGTON** '03, and **BURT R. RICKARDS** '99, on the 28th.

July, 1881—**EDGAR M. POST** '09, on the 1st; **CLIFTON G. CRULL** '04, and **BENJAMIN D. SOLOMON** '03, on the 2nd; **FRANKLIN O. ADAMS** '07, on the 5th; **FREDERIC S. KRAG** '06, on the 7th; **STANISLAUS SKOWRONSKI** '04, on the 8th; **LOUISE M. BOSWORTH** '08, on the 11th; **ALLAN W. CROWELL** '02, on the 17th; **CLIFFORD B. CLAPP** '02, on the 18th; **WILLIAM H. CONANT** '04, on the 21st; **WALTER D. ESTES** '04, and **PHILIP B. RICE** '03, on the 22nd; **C. WILLIAM WALLOUR** '10, on the 23rd; **ALLAN HANSEN BARROWS** '05, on the 24th; and **JOHN J. DOOLEY** '03, on the 26th.

August, 1881—**ANDREY A. POTTER** '03, on the 5th; **J. LAWRENCE LYON** '04, on the 8th; **BLAINE H. MILLER** '04, on the 14th; **FREDERICK E. BURDEN** '05, **EDWARD L. EDES** '04, and **ALBERT E. SWEETSER** '05, on the 15th; and **AMBROSE M. MERRILL** '04, on the 18th.

September, 1881—**HARRY R. GABRIEL** '05, on the 4th; **ALBERT W. NICHOLS** '04, on the 9th; **FRED M. PIERCE** '04, on the 12th; **SAMUEL SEAVER** '05, on the 14th; **HENRY KRAMER** '04, on the 17th; **CHARLES F. UNDERHILL** '04, on the 24th; **CLARENCE E. BARBER** '05, on the 28th; and **CLARENCE E. LASHER** '06, on the 29th.

Street, Yarmouth, Nova Scotia. . . . **James H. Haste**, who died January 7, 1929 leaving a large sum to Technology was with the Eastman concerns at Rochester. The Alumni Association President, Clarence L. A. Wynd, '27, now has the position that Haste held.

After the Centennial events Joe Harrington, 3d, '61, acknowledged the receipt of the congratulations of the class and told of his interest in his grandfather's class.—**James M. Driscoll**, Secretary, 129 Walnut Street, Brookline, Mass.; **Henry R. Hedge**, Assistant Secretary, 105 Rockwood Street, Brookline, Mass.

'97

From the Alumni Association we have received an up-to-date roll of living members assigned to our class, totaling 44. Only 27 of these received degrees with our class, including one member of the fair sex. The remainder includes those who for one reason or another did not remain for the full four years, special students and transfers. Less than one-half of the total continue to show active interest in class affairs. In fact, with a few exceptions, our members remain dormant, in a state of complete silence. Now that winter has passed we hope some will spring into articulation and produce some news. Unfortunately no one has shown enough energy or courage to offer his services for either of our secretarial offices. When a few of us assemble at luncheon in the Great Court on Alumni Day, we trust that a new Secretary-Treasurer and an Assistant Secretary may have been selected. We will then turn over such class records as we have from our late Secretary **Gus Lamb**. Our most interesting record is a book containing copies of minutes of our undergraduate class meetings. Our graduate constitution, adopted June 9, 1897 is clearly outmoded after 64 years. For instance: "No assessment greater than one dollar a year may be levied except by a special vote." Of course, a dollar was worth something in those days but \$20 today wouldn't go very far toward our 65th Reunion a year from now. We are sure your new Secretary-Treasurer will appreciate your suggestions regarding the reunion and its financing and they are herewith urgently requested.—**John P. Ilsley**, Treasurer, 26 Columbine Road, Milton 87, Massachusetts.

'98

Presumably, everyone in the class has received a copy of the Roster of the Class, addresses as of April 1, 1961. In order to make it correct in every respect, the officials of the class request the following information: 1) Is your address correct? 2) Do you wish a further title to be affixed to your name? 3) Do you wish your summer address as well as your winter address to be included? 4) Is there any other comment or suggestion that you care to make? Unless we

hear from you to the contrary, we shall assume that everything in the roster is correct and satisfactory.

The M.I.T. Boston Luncheon Club has steadily grown in interest and popularity and has finally emerged as the M.I.T. Club of Boston. We quote from a letter from Bill Edgerly '49, President: "April 20 will be our Annual Meeting. On the agenda will be the adoption of new by-laws, the new name M.I.T. Club of Boston, and a new status as an associate club of the Alumni Association." A typical meeting was described by our assistant secretary, **Frederic A. Jones**, in the last '98 Class Notes. The speaker was Dr. John B. Wilbur '26, retired head of the M.I.T. Department of Civil and Sanitary Engineering. Fred was graduated from Course I (Civil Engineering) in 1898, so he is especially qualified to explain to us the remarks of Professor Wilbur. . . . The April 20 meeting was made timely and interesting by a talk on "Atomic Power in New England." The speaker was Mr. Roger Coe, Vice-president of Yankee Atomic Electric Company. To accompany the talk, each person at the meeting was presented with a 20-page brochure, describing in detail the formation of Yankee Atomic Energy Company and the construction of the plant. Mr. Coe also showed descriptive slides. Doubtless any reader of these notes who was unable to attend the meeting can secure a copy of this brochure by writing to Yankee Atomic Electric Company, 441 Stuart Street, Boston 16, Mass. It will well repay your careful study.

The long expected and eagerly awaited Centennial Celebration of M.I.T. has come and passed. For the secretaries to try to describe it would exceed by far the limits prescribed for Class Notes. Those of the class who attended sessions open to the Alumni were greatly impressed. Those who could not attend will find a preliminary write-up in the May '61 issue of The Technology Review under the title "The Institute Celebrates Its 100th Birthday," and further reports in later issues. . . . Our honorary classmate, Dean **George R. Harrison**, of the Institute's School of Science, has been active in the Centennial Celebration and in visiting various M.I.T. Clubs. The May issue of The Technology Review has a picture of Dean Harrison and a write-up describing the meeting of the M.I.T. Club of the Twin Cities which he addressed in February. . . . Another classmate who can always be counted on to attend get-togethers of the class and other M.I.T. meetings is **Fred Dawes**. Fred is indeed active, but his activity is surpassed by that of his son, Robert Taylor Dawes '26. If you wish to read more about son Robert, turn to the Class Notes of '26 in The Technology Review. . . . Eugenia Blanchard, wife of our former secretary, Professor **Arthur A. Blanchard**, left in early April for a tour of the Orient. The secretary's sister has received a lovely card from Kyoto, Japan, from which we quote in part: "We are charmed by this lovely city. . . . Leaving in a few days for Hong Kong. The tour is one of the best I ever had." She expects to be back

by the first part of June and to attend Alumni Day.

We regret the passing of our classmate, Commander **Edward C. Sherman**, who died on February 28, 1961. We have received through the courtesy of his daughter, Mrs. John W. Newlin, of 1400 North Avenue, Tyrone, Pa., some excellent copy concerning the distinguished career of her father, which we shall use in part for publication in later issues of Class Notes. We indeed thank Mrs. Newlin for her thoughtfulness. . . . We will close this installment of '98 Class Notes with a brief quotation from the recent article by Dwight D. Eisenhower, entitled, "Now That I Am A Private Citizen," published in the Saturday Evening Post: "What next? . . . There is little reason for me or anyone else to think and talk of or to live in the past. . . . The task is to use the past and its experiences to help us peer more clearly into the future and to do our best to make it better. . . . I think it will be fun; I hope it will be useful."—**Edward S. Chapin**, Secretary, 2 Gregory Street, Marblehead, Mass.; **Frederic A. Jones**, Assistant Secretary, 265 Chestnut Hill Avenue, Brighton 35, Mass.

'99

We regret to announce the death on May 14 of **James B. Ellery**, V, of Gloucester, Mass. He is survived by his three daughters, Susan Jones, of Gloucester; Evelyn Brennan, of Norristown, Pa.; and Marie Blanding, of Northport, N.Y. His wife, the former Catherine Lesser, passed on in 1955. To quote from an account of his life in the Gloucester (Mass.) Times: "For many years he was a chemist with the Erie Forge and Steel Company of Erie, Pa. In 1930, he retired and returned to Gloucester. . . . He was a descendant of William Ellery, a delegate to the Continental Congress in 1776 and a signer of the Declaration of Independence. . . . He was a member of the Independent Christian Church, Universalist, and the William D. Corliss Men's Club of that church, the Leonard Club of Annisquam and the Cape Ann Scientific Literary and Historical Association. In 1956 he wrote and privately published "Records of Ellery-Dennison-Parsons Families," which recorded facts and figures about the 777 descendants of William Ellery, George Dennison and Jeffrey Parsons. . . . Memorial contributions may be made in his name to the Gloucester District Nursing Association.—**Burt R. Rickards**, Secretary and Class Agent, 349 West Emerson Street, Melrose 76, Mass.

'00

William S. Hart died April 14, 1961. Born in Foxboro, Mass., he was living in Hyde Park at the time he entered M.I.T. with us in 1896. In 1903 he went to Montreal and joined the Shawinigan Water and Power Company as an accountant. Three years later he was appointed secretary and in 1912 became treasurer. Later he was elected to the board of di-

rectors. He served as vice-president, director and treasurer from 1928 until his retirement in 1947. He was also a director of a number of subsidiary companies, a former vice-president and director of the Quebec Power Company and a past chairman of the Shawinigan Products Corporation, New York. He served as president and managing director of the Provincial Transport Company until 1948. A former president of the Grace Dart Hospital, he was governor of the Montreal General Hospital, the Queen Elizabeth Hospital, and a past president of the Province of Quebec Society for the Protection of Birds. He was a member of the Canadian Club, the St. James, Montreal Club, Beaconsfield Golf Club, Royal Montreal Golf Club and the Garrison Club in Quebec city. He was a member of the United Church of Canada and at one time secretary of the Board of Trustees, Dominion Douglas Church of Westmount. He is survived by his wife, the former Louise Scott; three sons, William, Joe and George; one daughter, Mrs. R. D. (Margaret) Ross; and 13 grandchildren.

Colonel **Lawrence W. Jenkins**, one of Salem's first citizens, died April 20, 1961, at the age of 88 years, following a short illness. He was born in Salem and educated in the Salem schools and at Noble's School in Boston. He graduated from Harvard in 1896 and attended M.I.T. the following year as a member of the Class of 1900. He then traveled extensively and in 1900 became associated with the Peabody Museum as a volunteer worker. The next year he was appointed curator of ethnology of the Marine Hall and ultimately director emeritus of the museum. His scientific and anthropological pursuits contributed substantially to the enrichment of useful knowledge in Salem. He also was a member of the Salem Marine Society, Essex Institute and a former member of the Second Corps Cadets. During World War I he served with the 15th Massachusetts State Guard and was retired with the rank of lieutenant colonel. He was a member of the Sons of the American Revolution and was active in a number of military and patriotic organizations. He is survived by his wife, the former Arvilla Bray; two sons, Benjamin G. Jenkins of Wellesley and Stephen W. Jenkins of Salem; four grandchildren and five great-grandchildren.

Professor **Charles E. Paul**, 84, of St. Petersburg, Fla., died May 2, 1961. He was born in Belfast, Maine, December 6, 1876 and prepared for M.I.T. at Chauncy Hall. He entered the Institute with us and graduated in mechanical engineering in 1900. After a brief experience as design and sales engineer with the James W. Tufts Company, Boston, he became, in 1903, assistant professor of mechanical engineering in the Kansas State College. In 1905 he became professor of mechanical engineering in New Mexico College of Agriculture and Mechanic Arts. In 1907 he was professor of mechanics at Pennsylvania State College and in 1908 associate professor of mechanics in Armour Institute of Technology (now Illinois Institute of Technology). In 1914 he became professor of mechanics in charge of

the department and in 1941 was retired as professor emeritus. In addition to his teaching, he also engaged in a consulting practice specializing in industrial construction and materials. He served as associate editor of the *American Builder* and the *Cement World* from 1910 to 1915, and as construction engineer for the National Lumber Manufacturers Association from 1915 to 1921. He was the author of booklets and technical articles on building construction, concrete, lumber, and estimating and contracting. He was a member of the American Society for Testing Materials, the Western Society of Engineers, the American Society for Engineering Education, and the honorary engineering fraternities, Tau Beta Pi and Theta Xi. He is survived only by relatives by marriage.

Arthur Clarke Melcher died May 14, 1961. He was probably the youngest member of the Class of 1900, as he was born June 26, 1880 and consequently was only 16 when we entered the Institute. He then lived in Newton Center and had resided there ever since. He graduated in Course V, and from 1903 to 1920 he was on the staff of the Institute as research associate in physical chemistry. From 1920 to 1946 he was manager of the Division of Laboratory Supplies.—**Elbert G. Allen**, Secretary, 11 Richfield Road, West Newton, Mass.

the signature of Theodore Roosevelt, was presented to the Roosevelt School by Claude E. (Dan) Patch of Stoneham, to whom it was addressed, at a school assembly on April 6. Mr. Patch is an M.I.T. graduate and retired industrial engineer, whose work has taken him to Europe, the Near East, and Hawaii. He became interested in the Roosevelt School in May of last year when he provided a Spanish War uniform for use at the annual Memorial Day program. In accepting the Roosevelt letter, Miss Esther S. Lyman, principal, thanked Mr. Patch for his generosity in presenting the original letter to the school and for his stories which gave his audience of seventh and eighth graders greater understanding and appreciation of Teddy Roosevelt."

The Alumni Office reports the death of **Charles H. Sisson** on March 19, 1961. He was retired from active work and made his home in Cincinnati. . . . It may be of interest to know that the Alumni Fund sets our active membership at 56. Next year will bring our 60th Anniversary and class officers are now looking into the idea of an "on the Campus" Reunion and will later report to the class.—**Burton G. Philbrick**, Secretary, 18 Ocean Avenue, Salem, Mass.

'03

In responding to the urgent appeal from the Review editors for our monthly report of Class Notes, your secretary, like former secretaries **Jim Cushman** and **Ray Gould**, vehemently invokes the nine daughters of Jupiter for an inspiration. He secures much solace, however, while checking our members' cards, from the vitality and diversity of our group. To those of you who have faithfully responded with your autobiographies, unbounded praise is gratefully bestowed. It is hoped, however, that more classmates having good intentions will try to complete the desired requisite before their final obituaries. Material of extreme personal interest has already been received and can yet be related for our classmates, now living in distant and retired composure. We are still closely united by each monthly Review. A simple postal card having a few brief notes will enliven the interest of our supposedly forgotten classmates.

Herman J. Cass, II, passed away April 12, 1961 at North Andover, Mass. . . . **Paul R. Parker**, XIII, is still enjoying retirement at Monhegan, Maine, for our members to meet as they pass by this coming summer. . . . An inspiring notice in the Norwalk, Conn., newspaper of March 16 proudly extols our devoted classmate and class agent, **Robert J. King**, III. He is pictured with his son, Robert Gardner King, receiving the United Foundation Industrial Honor Roll from Robert B. Oliver, the 1961 United Fund Campaign Chairman and president of the United Foundation. A member of the Industrial Honor Roll is a firm which meets the top United Foundation standards in contributing financial support to Norwalk's essential health, welfare, and character-building agencies. Such a firm

'01

These are the last notes until November and the reunion is a thing of the past. I cannot say anything about it for I am writing these notes in May. I have received 22 replies to the class letter which I suppose is good considering the shrinkage of numbers. . . . **Nat Patch**, II, from Buffalo, usually has something pleasant to say in spite of the fact that he is almost blind, cannot read and finds his way around with a cane. He is one of the cheerful members of the class.

A number of members who have sent news in the past simply sent their name and address. **Austin Hyde**, X, from Virginia says: "Am always interested in the Class Notes even though I have contributed little." . . . A letter from **Bill Farnham** says that he hopes to be at the reunion. . . . **Dave Cowell**, VI, Hingham, Mass.: "I have to say that I have come to the point that I am a stay-at-home ranger. I am in my 84th year. My knees do not work as well as they once did, and neither do my ears. My doctor has hinted that I should not go very far from home, but I am in good condition otherwise for my age." . . . I will save whatever other news I have until fall hoping that you will help me out before then.—**Theodore H. Taft**, Secretary, Box 124, Jaffrey, N. H.

'02

The following item from the Melrose Free Press shows that **Dan Patch**, although retired, is still active. The clipping reads: "An original letter, bearing

receives an award commending it for civic-minded help as a United Fund contributor. Bob King was born in Nashua, N.H., in 1882, and later studied for a chemistry career at M.I.T. After graduation and at the early age of 23, he was made superintendent of a plant for the Merrimac Chemical Company, which position he held for seven years. He then assumed employment with the United States Rubber Company as a research chemist for nine years, during which time he was in close association with the great inventor, Thomas A. Edison. Upon retirement he established the Robert J. King Company, located on Science Street in Norwalk. The company produces chemicals for various rubber applications and at present employs 15 workers in an expanding program of new products. Our highest regards are bestowed to Robert on his active research, the spirit of which activates M.I.T., our alma mater.—**John J. A. Nolan**, Secretary, 13 Linden Avenue, Somerville, Mass.; **Augustus H. Eustis**, Treasurer, 131 State Street, Boston, Mass.

'04

Word has been received that **Birchard F. Miner**, Course VI, died at Long Beach, Calif., on December 18, 1959. No details are available. . . . One other item of class news we have to report is taken from the March 31 tabulation of the Alumni Fund. This, you understand, includes not only those who received the degree but all who at any time were registered with us as students. The report shows we have dropped from second place in per cent contributing to the fund as stated last month, to fourth place. The order is: '99 at 59 per cent, '11 at 58 per cent, '98 at 54 per cent and '04 at 53 per cent.

Dan Comstock made the first page of the Boston Herald on March 27 in an interview with the business editor. The headline stated: "Comstock Boosts Fame as Inventor." This is followed by a quote: "The amount of energy contained in a pound of any substance is capable of more work than can be performed by 1,000 horses in 1,000 years . . ." Then the article continues. "A faded clip from the Herald's 'morgue' with a January 9, 1909 dateline thus quoted a 26-year old Boston physicist whose name should have been Einstein. Instead it was Dr. Daniel F. Comstock. Quite independently of the German school of thought which led to the celebrated $E=MC^2$ equation, Comstock hit upon the theory of atomic power. Einstein's ideas did not become world known for several years thereafter. The same imaginative thinking within a few years helped Comstock become the principal developer of the Technicolor process for making colored motion pictures. While Dr. **H. T. Kalmus** got most of the credit for it, actually the kudos should have gone to Comstock. All this took place in the early 1920's. Whatever became of Dr. Comstock? The answer to that was supplied yesterday at an intriguing old-new research organization named

Comstock and Wescott. Since 1925, when he split up in a perfectly friendly fashion with Kalmus, Comstock 'went underground.' That is, he kept right on inventing and developing scientific processes. But he did it for private companies where everything he accomplished was kept under tight wraps. Most of the research was done at a well-hidden (purposely) lab behind M.I.T. at 179 Fifth Street, Cambridge. C&W has just moved into a spanking fine facility at 765 Concord Avenue, still in Cambridge. Equally sharp mentally and in appearance is 77-year old Dr. Comstock, president and mentor to 60 scientists who should be laboring under a sign: 'Brains for Hire.' Prominent among the recent developments is a way to powder steel and form it successfully into parts. The metallurgy of powdered iron has been known for years. But the new C&W process opens the door to rapid fire production of steel parts that previously had to be machined. It has, Comstock thinks, a very promising future. With the new method you can obtain a cost saving of 6-1 compared to machining. With this method it will be possible to fashion revolver barrels, computer parts; literally anything. The advantage over powdered iron is that the pressed steel particles suffer from no porosity. You get no weak spots. 'I think there's really a killing to be made,' Comstock predicted, 'if you can carry the thing out with imagination.' C&W doesn't own the process outright; they developed it for a client. But they can license it, Comstock revealed. It offers almost unlimited opportunity of obtaining extreme cheapness of manufacture for many difficult parts." The interview went on to discuss several other projects the company has worked on in the past or is at present perfecting but space will not permit inclusion here.

Many of you will probably be changing your base of operations for at least part of the summer. Wherever you are we wish you a pleasant and peaceful time. Our next greetings are due in the November issue at which time we hope to report everything satisfactory in public and private affairs and no shrinkage in our membership.—**Carle R. Hayward**, Secretary, Room 35-304, M.I.T., Cambridge, Mass.; **Eugene H. Russell, Jr.**, Treasurer, 82 Devonshire Street, Boston, Mass.

'06

Because these notes are filed in mid-May, you will have to wait until November for the story of our 55th Reunion, including who came, what they did, etc.; but it now appears that the attendance will approach 40, including 12 or 14 couples and 10 or more singles. The peak as usual will probably be at the luncheon on Alumni Day. Our thanks to those who attended for the joy their participation contributed, and our regrets to those who missed it, two of whom said they might make our 60th! Perhaps they should be on the committee to plan for it.

Among the reunion replies received on April 25 was one from Bethlehem, Pa.

As **Floid Fuller**, on his prompt preliminary return, had indicated his intention to attend, I opened that envelope with pleasant anticipation. Imagine the shock when I read the note Frances had written at the bottom: "The enclosed speaks for itself (obituary and photo of Floid from the Bethlehem Globe-Times). He went as he would have wanted, after three days of hospitalization because of a heart attack." Floid had died on April 20, and I immediately wired: "We are so shocked and grieved, Frances, and send deepest sympathy from the class." In her reply Frances expressed her appreciation for the telegram and said that Floid went almost as he had always wished, with his shoes on. He had had a small heart attack a few days before and was irked at the thought of a month of rest.

Floid Merrill Fuller was born September 4, 1883 in Scranton, Pa., prepared at high school there, entered and graduated with us in Course II. The following year Floid was an assistant in Mechanical Engineering at Tech and also took work in Course VI in which he received his S.B. with '08. During our undergraduate days he was in the Tech Show "Simon Pure Brass;" was a member of the Mechanical Engineering Society and of the Penn Club, being vice-president our senior year. His thesis was, "Efficiency Test on Diesel Engine at Baldwin Locomotive Works, Philadelphia" with **E. M. Smith**. By 1910 and for several years he was in Duluth, for a time as treasurer of the Duluth Show Case Company, then as consulting engineer. He was also secretary of the Technology Club of Lake Superior. In 1917 he joined the USNRF as a lieutenant and for a spell was in Washington, D.C., with the Bureau of Ordnance, then assistant inspector of ordnance at the South Bethlehem plant of Bethlehem Steel, retiring from active service in June, 1919 but continuing in the Reserve until 1939. By or before 1920 he was in charge of new construction for the United Service Company in Dubois, Pa., and in November, 1923 he joined the Penn Power and Light Company, and soon became distribution engineer, a position he filled until he retired August 31, 1948.

Floid was affiliated with the Bethlehem Club, M.O.R.A. and Rosemont Fire Company. He was a member of the Engineers Club; the M.I.T. Club of the Lehigh Valley; a life member of A.S.M.E. and also of A.I.E.E. (he compiled a history of the Lehigh Valley Section several years ago); National Society of Professional Engineers; and the H. P. Lentz American Legion Post of Allentown, Pa. He was a member of the First Presbyterian Church and a director of the Pocono Lake Preserve, also a member of the Honorary First Defenders of Allentown. Floid "is survived by his wife, the former Frances Tompkins; a daughter, Mrs. Marian Moody, of Tampa; son, Robert, of Bethlehem; a brother, Howard, of Bethlehem; and five grandchildren." Floid attended our 20th Reunion and most of them since, often with his wife. Through the years he has been one of our loyal members and a helpful correspondent, one we shall miss at future gatherings.

Early in May a notice came through the Alumni Office of another death; that of **Herbert James Mann, 2d**, on April 19, 1961, in Pasadena. He was born in Chicago, March 25, 1883, and prepared at Chicago Manual Training School, entering the Institute with us in 1902. Herbert held many responsible positions during the four years, most of them in connection with athletics. He was assistant manager and manager of the varsity track team; on the Athletic Advisory Council and secretary-treasurer of the M.I.T. Athletic Association senior year; Captain of the '06 relay team (class champions senior year); on the Institute Committee junior year; and was vice-president, then secretary-treasurer, then president of the Chicago Club. Considering all the above activities, perhaps it wasn't surprising that Herbert didn't get his degree, but he kept on being busy, as a contractor's superintendent in Globe, Ariz., then building inspector in Phoenix, and a contractor in Arizona on federal irrigation works, concrete bridges, etc. In the early '20's he moved out to Los Angeles and in 1925 was president of the Mann-Walker Building Company, Inc., with various addresses in Los Angeles until '48 when he was a consulting architect in Pasadena. During recent years he and his associates have been conducting organized research in cost reduction of buildings, lecturing and conducting a weekly radio program on that subject. In the 1916 class history his marriage to Georgia Coolcon in 1909 was reported. They had one son. His second wife, Stella Terrill Mann, survives.

The Alumni Office has recently removed two names from the active class list: **Roy G. Kennedy, II**, and **Robert K. Stoddard, VI**. . . . Change another address, that of **Charles E. Abbott, XIII**, from Naples, Fla., to Seapit Avenue, East Falmouth, Mass.—**Edward B. Rowe**, Secretary-Treasurer, 11 Cushing Road, Wellesley Hills, 81, Mass.

'07

Evidently many of the '07 men had planned to give me personally notes about themselves or other classmates on Alumni Day, June 12, as I had not received any '07 letters up to time of going to press with this edition of the Class Notes. . . . Do any of the '07 men recall **Horace S. Holt**, Course X, who was with our class the four years we were on Boylston Street? I knew Horace quite well but lost all contact with him after he left college. Strangely enough, he came to Whitinsville with his son, who is a salesman for Minnesota Mining and Manufacturing Company, and I just happened to learn that an '07 man was in town and contacted him. Horace is retired and lives in Columbia, Conn. After leaving college, he spent some time in South America and in Rumania. I understand he was quite successful in raising white-faced cattle. Perhaps some of you men might write to him. I will put his name on our active list to receive class literature. . . . The Alumni Register has sent me the following changes of ad-

dress: Commander **John H. Walsh**, Course XIII A, 625 East 2nd Street, Pass Christian, Miss.; **John E. Moore**, Course VI, 135 Norwood Avenue, Upper Montclair, N. J.; **Edward G. Lee**, Course I, Wulfort Road, Sanibel Island, Fla.; **George W. Otis**, Course I, South Chatham, Mass. (summer address).

Your secretary has been asked to serve on the Second Century Fund drive for the Worcester district, under direction of Thomas H. West, '22, President of the Draper Corporation of Hopedale. By the time you read this, you will have been individually contacted for your own gift. I trust every '07 man will give to the best of his ability. . . . In a clipping from the Orleans Oracle (Cape Cod) of May 11, 1961, I find that our classmate, **Milton MacGregor**, is keeping physically fit, as he was one of 10 men from the Orleans Bowling Center to compete in the final roll-off of the Cape Cod Bowling Association. Besides his physical activities, Milt is keeping mentally fit by teaching in various high schools in the vicinity of Brewster, Mass.

Your secretary's secretary, who transcribes these notes for me, insists that the following item would be of interest to the men of 1907: In one of the Providence papers of May 5, an item was carried on the 61st anniversary of the founding of Barrington College, Barrington, R. I. At the Academic Convocation, several citations were awarded, and one went to **Philip B. Walker**, a trustee of the College for 26 years and the chairman of the board for the past three years. As chairman of the Building Committee for the College, he has been responsible for the installation of a complete sewer system, a new dormitory housing 160 students, and the renovation of several buildings on the Barrington Campus.—**Phil Walker**, Secretary and Treasurer, 18 Summit Street, Whitinsville, Mass.; **Gardner S. Gould**, Assistant Secretary, 409 Highland Street, Newtonville 60, Mass.

'08

Our fourth and final dinner-meeting of the 1960-61 season was held at the M.I.T. Faculty Club, Wednesday, May 10 at 6 P.M. Bunny Ames, Bill Booth, Nick Carter, Myron Davis, Les Ellis and Henry Sewell answered the roll call. Our guests were Mesdames Ames, Davis, Ellis, and Sewell. There was the usual Wednesday evening crowd in the cocktail lounge, but we managed to get our usual corner table so we could all sit together while enjoying our favorite appetizers and the delicious Swiss cheese and crackers from the buffet. About 6:30 P.M. we adjourned to private dining room number four for a fine dinner and a special dessert of baked Alaska, compliments of our genial host, Mr. Morrison. It was decided to have a reunion after all, at the Melrose Inn, Harwichport, June 9-11. This will be our fifth visit to the Melrose Inn. We will tell you all about it in the November issue of The Review. As we had no Kodachromes, we adjourned fairly early.

We are sorry to report the death of **Henry H. Damon** in Newton Center, Mass., on May 10, 1961. . . . **Harold Osborne** became mayor of Montclair, N.J., June 1, 1961. Best wishes, Harold, for a most successful administration. . . . Our first dinner-meeting of the 1961-62 season will be held at the M.I.T. Faculty Club, 50 Memorial Drive, Cambridge, Mass., on Wednesday, November 8, 1961 at 6 P.M. Try to join us and see the old gang. Best wishes for an enjoyable summer.—**H. Leston Carter**, Secretary, 14 Roslyn Road, Waban, Mass.; **Leslie B. Ellis**, Treasurer and Assistant Secretary, 230 Melrose Street, Melrose 76, Mass.

'09

We had not heard from the Reverend **Elmo A. Robinson, VII**, for some time until recently when he sent us a clipping from the San Jose Mercury headed by a picture of Elmo receiving a \$500 check from Dr. Frederick C. Dommeyer, head of the San Jose State College philosophy department, for winning a sermon contest sponsored by the Albert Schweitzer Education Foundation. For 30 years Elmo taught philosophy at the State College and was head of the department. On his retirement, he was asked to take over the pastorate of the Los Alamos, N.M., Unitarian Church. He found the parish composed mainly of persons with doctorate degrees who are "highly intelligent and keenly critical." He also states that "individual philosophical security is one of the major desires of the men and women who study the atom for peaceful and war uses in the laboratories at Los Alamos." To further this end he holds philosophical discussions following services. We are sure that the Reverend Elmo is serving a most useful purpose in his new position and that he finds his scientific training at the Institute most helpful.

We received an airmail letter from the Erawan Hotel, Bangkok, Thailand, dated April 9, as follows: "I thought you might like to have the following for the '09 notes. **R. E. Blankenbuehler, X**, is on his way around the world after recovering from the coronary that knocked him out for a couple of years. He expects to get back to his home in Elizabeth, Pa., some time in June, 1961. He left there in February. With regards, **R. E. Blankenbuehler**." Many of you may recall having met Rea at the 50th Reunion. The secretary surely appreciates his sending an item for the Class Notes, particularly from half way around the world. . . . In the March, 1961, issue of The Rotarian, there was a symposium, "Making the Most of the Mature Worker," with a foreword by **Tom Desmond, I**. Tom states that our gross national product will probably reach \$750 billion by 1970 which will require full utilization of our manpower facilities estimated at 87 million workers. A large number of the required workers will be available among those 45 years of age and older. However, studies show that such workers encounter resistance in finding employment. Many states have legislation barring discrimination against

older workers. Tom enlisted the aid of some of the top industrial, labor, and public figures of the nation for answers to the problem.

Ed Howe, VI, sent us a letter from West Haven, Conn., his home town, advising us of the death of **Calvin Nelson Harrub**, XI, which occurred on February 18 at Fort Myers, Fla., where he had lived during the past year. He enclosed an obituary taken from a Nashville, Tenn., newspaper. Nelson, one of eight children, was born in 1881 and was a direct descendant of William Bradford, the first governor of Massachusetts. He prepared for the Institute at Kingston High School and Williston Seminary, Easthampton, Mass. He moved to Nashville in 1919 where for 36 years he was head of the C. N. Harrub Engineering Company which specialized in water supply, sewage, building, and structural work. He was named city sanitary engineer in 1941. He was a life member of the American Society of Civil Engineers, Engineering Association of Nashville, the American Waterworks Association, and was a professional engineer. He was active in Masonry and was a past worshipful master of Phoenix Lodge. He was a charter member and an elder in the Westminster Church of Nashville and at the time of his death was a member of the Fort Myers Presbyterian Church. While at the Institute he was a member of the Civil Engineering Society, Biological Society, Senior Portfolio Committee, and Class Day Committee. He held the rank of first lieutenant, later captain of the Public Health Service, Camp Johnston, Jacksonville, Fla., in charge of malaria control. He was married in 1910 to the former Jessie Alice Morrison of Brockton, Mass., who survives him. Other survivors are three children, C. Nelson Harrub, Jr., W. W. Harrub, and Mrs. Jessie Miller, seven grandchildren, and two great-grandchildren. We have written to Mrs. Harrub conveying the sympathy of the class as well as our own. We remember Nelson as a hard worker, an excellent student with high ideals, and we all were very fond of him. He was greatly respected by those who knew him.

We all know from former Class Notes what avid globetrotters **Ben**, II, and **Barbara Pepper** are. In the spring of 1958 they took a three months' voyage around the world and in the spring of 1960 a tour of the Mediterranean and Near East. Before this they had visited Mexico and many other places. Early in February of this year they went to England and from there through the Mediterranean, Suez Canal, down the east coast of Africa, around the Cape of Good Hope, and back up the west coast. On account of the revolutions and turbulent conditions in Africa the ship was obliged to omit about one-third of its landings. However, the Peppers did visit Cape-town and much of the surrounding country. The entire trip was made by boat. They returned the first week of May and will spend the summer at their summer home on the hill at Crow Point, Hingham, just one house removed from that of **John**, II, and **Margaret Davis**. . . . This is the last number of The Review

until November. The class officers wish everyone a most pleasant summer and thank those who have co-operated in submitting news for the Class Notes. When this issue of The Review is received your secretary and Muriel will be in Interlaken, Switzerland, having just completed a two weeks' meeting of the International Electrotechnical Commission which your secretary attended as a U. S. delegate. We regret that it was necessary to omit Alumni Day but **Francis Loud**, VI, Assistant Secretary, agreed to take our place and record the members present together with any news items.—**Chester L. Dawes**, Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass.; Assistant Secretaries: **George E. Wallis**, Wenham, Mass.; **Francis M. Loud**, 351 Commercial Street, Weymouth 88, Mass.

'10

During the past month I have received notice of the death of **Floyd Pitcher** on April 11, 1961. The following is from the New Haven, Conn., Register: "Floyd J. Pitcher, former assistant to the chief engineer of the New Haven Railroad, died Tuesday. He was 73 years old. Mr. Pitcher retired five years ago from the New Haven Railroad, where he served for 40 years. Prior to that, he was with the Boston & Maine Railroad. He was born February 6, 1888, in Somerville, Mass. He was graduated from M.I.T. in 1910. His former memberships included the Edgewood Club, Union League, New Haven Harbor Commission with present membership in the American Railroad Engineers Association."

Walt Spalding, who is taking a leisurely trip around the world, sent me a card from Nice, France, with the following report: "This is our first rain (so this card depicts the vista from our window as of yesterday) in 10 weeks of travel with stops in Manila, Bangkok, New Delhi, Saudi Arabia, Cairo, Beirut, Istanbul, Athens, Rome, and now two weeks here where we got a Peugeot car. It was rough going in spots, in the dirty and poor half of the world, but each stop was better, with Athens, Rome and here, fascinating and beautiful. We drive next week to Geneva, Vienna, Paris, then ship the car from England and fly to New York or Boston, then home by late July. Hope to see you. We've had perfect health and weather." . . . At the last Alumni Council Meeting I had the pleasure of sitting with **Duc Clapp** and **Harold Manson**.—**Herbert S. Cleverdon**, Secretary, 120 Tremont Street, Boston, Mass.

'11

Bill Orchard, XI, of Maplewood, N.J., is president of the Maplewood Citizens Committee and a veteran GOP leader. The Citizens Committee, authorized in Maplewood to study municipal election procedures there, may face opposition from established political groups if it rec-

ommends a non-partisan election system. Bill vowed during the bitter primary campaign that the MCC would continue to be an "active political force" regardless of the outcome of the election. These quotations are from a clipping from the May 4 edition of the Newark, N.J., Evening News, sent to me by Carole Clarke, Secretary-Treasurer of the Class of 1921, who wrote: "Hope the Class of 1911 will have as much enjoyment out of their 50th Reunion as we hope for our 40th." We appreciate his sending the clipping.

A news clipping listed Admiral **Luis de Florez**, II, as one of several trustees of the American Optical Company, re-elected this year. . . . **Chauncy Smythe**, I, is chairman of the Thew Shovel Company, Lorain, Ohio. He joined the company shortly after his graduation from M.I.T., and has been with them continuously for 50 years. His father was head of the company long before. In normal times, Smythe reports, demand exists for about 3,000 power shovels a year. When orders come in too fast, even for the company, Thew subcontracts its work. Smythe says: "Better than maintaining excess capacity far beyond any normal needs. Eliminates major layoffs on our payroll when things get tight again. We keep 1200 to 1500 at work year-in, year-out, boom or bust." The foregoing is from a clipping from the March 7 edition of the New York World-Telegram & Sun.

Walter Wilson, X, is the third president of the Andrew Wilson Company, Lawrence, Mass. He succeeds his father and brother in that capacity. Unlike his brother, the late Alexander Wilson, Walter did not enter his father's business upon graduation from M.I.T. He accepted a job with the Lummus Chemical Engineering Company of Boston, where he worked for three years. After his father, Andrew Wilson, died in 1913, his brother became president, and Walter was treasurer, and held that office until 1955, and then became president. The company specializes in the manufacture of fabricated steel shelving and lockers, used in offices, hospitals, libraries, etc. The foregoing information is from a clipping from the April 4 edition of the Lawrence Eagle-Tribune.

William Stover Burleigh, II, passed away in September, 1935. His widow, Mrs. Dorothy Burleigh, retired last April after 17 years as a librarian in Natick, Mass. Son W. S. Burleigh, Jr., and family live in Falmouth. . . . Just received notice that **Munroe Pevear**, IV, of 71 Chestnut Street, Boston, Mass., passed away November 30, 1960. No further details were received. . . . **Edwin Pugsley**, VI, returned in May to Leets Island, R.F.D. 3, Guilford, Conn. He alternates between Connecticut and Florida. . . . **Erving Young**, I, moved to 19 Aspen Road, West Orange, N.J. Former address: 54 Warwick Street, East Orange. . . . **James Gannon**, III, moved from 40 Galen Street to 310-2 Grove Street, Waltham 54, Mass. The Grove Street place is a labyrinth of small one-story apartments, each group with a Grove Street even number and apartment numbers. I had a very pleasant visit with Gannon in May.

At the writing of these July notes, the Class of 1911 has been invited to be special guests at the June Graduation exercises, with gowns and special seats on the platform. Details on this, on Alumni Day, and on our Snow Inn Reunion will appear in the November Review, inasmuch as that is the next issue after July.—**Henry F. Dolliver**, Secretary, 10 Bellevue Road, Belmont 78, Mass.; **John A. Herlihy**, Assistant Secretary, 588 Riverside Avenue, Medford 55, Mass.

'12

Doc Cook and **Hulda** have returned from a spring trip to South Carolina and are at home in Marblehead. **Doc** reports that **Larry Cummings** is back in Connerville, Ind., after spending the winter in the South. . . . **Harold Brackett** and his niece, **Eleanor Fordes**, who now makes her home with **Harold**, have also been in Florida this winter. . . . **Larry Cummings** has a summer home on Squam Lake and will have **Doc Cook**, **Harry Coddington**, **Harold Brackett** and **Bob Wisemann** up for two weeks of bass fishing a little later in the season. **Bob Wisemann** is going abroad very soon to observe a super-high-tension cable installation.

Bill Bird has resigned his office as chairman of the board of the Prophy-lactic Brush Company after 31 years active service. He will become honorary chairman of the board and a director of the Warner Lambert Pharmaceutical Company. After leaving M.I.T. **Bill** was chief engineer of the Texas, Oklahoma and Eastern Railroad in Broken Bow, Okla.; general manager of the Knox County Electric Company in Rockland, Maine; general superintendent and vice-president of the Rockland and Rockport Lime Company. **Bill** has been active in civic and community affairs and is a trustee of the Cooley Dickinson Hospital, the Wesson Memorial Hospital and the Nonotuck Savings Bank, and a member of a long list of service clubs. He will continue to reside at 325 Farrington Road, Longmeadow, Mass.

The following names are being dropped from the Alumni Register as no record of their whereabouts is available. If you can give information on any of them it would be greatly appreciated. **Herbert Coulson**, VI; **Garth H. Duell**, III; **J. Pryor Fish**, VI; **Dr. Nicholas M. Katsainos**, VI; **Hans C. Holm**, VII; **Mark D. Oettinger**, IV; **Leon A. Salinger**, V; and **Oscar K. Wiessner**, III.—**Frederick J. Shepard, Jr.**, Secretary, 31 Chestnut Street, Boston 8, Mass.; **John Noyes**, Assistant Secretary, 3326 Shorecrest Drive, Dallas 35, Texas.

'13

By the time you read these notes, the 48th Reunion of the Class of 1913 will be history. We expected a larger gathering than signed up. Evidently, many are waiting for the 50th in June, 1963. Several classmates found it impossible to at-

tend this year for various reasons. Although planning already for the big event, the 50th, the following were unable to attend this year: **Charlie Brown**; **Allen Brewer**; **Gil Pardey**; **Bob Tullar**; **Harry Wright**; **Walter Merrill**; **John Parks Coe**; **Professor Allison Butts**; **Warren Gentner**; **Henry Dew**; **Gardner Alden**; **Mac Waterman**; **George Dempsey**; **Paul Rudolph**; **Walter Muther**; **Gene Macdonald**; **Alexander Pastene**; **Maurice Levy**. Also: **Charles Edison**, who is recuperating from major surgery (hope you are approaching complete recovery soon, **Charlie**); **Bob Weeks**, because of his health; **A. C. Besosa**, who is severely hard of hearing; and **Albert Conant**, still living in bath robe and pajamas, were not able to attend. **Dave Nason**, Milwaukee; **Cedric Burgher**, Dallas; **Gordon Taylor**, Fort Myers, Fla.; **Joseph Balch**, Los Angeles; and **Ken Hamilton**, in Washington for the Navy, were too far away to make it. . . . This year's reunions took a vote on whether the 50th will be celebrated at a convenient motel or at the Oyster Harbor Club. (As you know, we have made reservations for 1963. Won't you write us and express your ideas?)

With the deepest regrets, it becomes our duty to inform the class of the death of **Harold M. Rand**. We are indebted to his dear wife, **Esther**, who spared no expense, time and effort over the years from 1953 to date for his comfort, **Jack Farwell**, and several of the papers for sending us the very sad news. **Harold** was born February 9, 1891 and passed away April 26, 1961. After a serious stroke in 1953 or 1954, from which he recovered partially, he lived a very cheerful life in St. Cloud, Fla. Howdy, with his ever happy smile and disposition was loved by legions of friends and acquaintances. The St. Cloud News published a front page editorial with the headline "Harold 'Howdy' Rand Was Everybody's Friend Here." We quote in part: "All of us will miss that familiar wheel chair or 'electric cart' with Howdy's friendly 'howdy' coming from it as we passed by. He covered his affliction with a mantle of cheerfulness, his pain with a smile, and left us all a little better for having known him." To his wonderful wife, **Esther**, and his daughter, **Mrs. John F. Brueson** of Pittsburgh, and three grandchildren, we offer our most sincere sympathy and best wishes from the members of the Class of 1913. We who knew Howdy will always remember him with that smile and the courage to recover from such a close call in 1953 to enjoy life and his beautiful new home in St. Cloud. . . . Again, we are the bearer of sad news. **George A. Litchfield** passed away April 29, 1961 after a very severe stroke on April 21. His wife, **Josephine**, writes that everything possible was done for **George** at the Massachusetts General Hospital. **Mrs. Litchfield** writes: "He was one beautiful soul. We celebrated our 50th wedding anniversary on October 12, 1960. It was a happy occasion, adding one more lovely memory to the many that were mine through a long and happy life together. And what we hold in memory is ours, unchanged forever." To you, **Mrs. Litch-**

field, we offer the sympathy and best wishes of the Class of 1913.

The **Charlie Thompsons** enjoyed a few weeks stay in Bermuda in April. We enjoyed their postcard. . . . **Marg** and **Geoffrey Rollason** sent us a card from Australia to which they travel often. We quote: "This is a truly beautiful country and so unspoiled. We had to come over as **Geoff's** sister is very ill, but will go back in a couple of weeks. Love to both." . . . A very appreciative note was received from **Jean Lane (Gerry Lane's widow)** and we quote in part: "I appreciate very much your expression of sympathy to me. **Gerry's** friends all have such wonderful recollections of him, and I am thankful that he could be well and busy and happy right up to the last. But life without him is very heartbreaking." If you ever come east, **Jean**, we would be happy to see you. . . . Signing off until November.—**George P. Capen**, Secretary-Treasurer, 60 Everett Street, Canton, Mass.

'14

Red hot news that **Ray Dinsmore** retired on May 1 comes from **Al Hoyt** and **Bob Moorhouse**. In order to save space in all Class Notes such items have been kept reasonably short. However, since **Dinny** has done so much without telling us about it, extra space is justified. **Ray** was vice-president of research and a member of the board of directors of the Goodyear Tire and Rubber Company. **Dr. Dinsmore** will be credited with an untold number of products and developments that could not have come about if it were not for his ingenuity. **Rayon** tire cord, water emulsion, synthetic rubber, and the new development **Natsyn**, a 100 per cent test tube replacement for natural rubber, bear testimony to the strides he has taken during the last four-and-one-half decades. **Dr. Dinsmore** was the fore-runner of the company's 1700-member research and development staff. **Dinny** has been with Goodyear for 47 years. He has just completed a five-year term as member of the M.I.T. Corporation. As every '14'er knows, **Dinny** has been a regular attendant at our five-year reunions. Few in our class can equal him as a raconteur. May you have a long and happy retirement, **Dinny**.

It has become customary for the 25th and 50th reunions to be held in or near Boston and to have wives present. A stag dinner is usually held, as well as a luncheon with guests from the Institute. When we were celebrating our 25th, our 50th looked a long time ahead. Now it is only three years away. What have you to suggest to **Charlie**, **Herman** or **Rich**? Our numbers are decreasing rapidly. Let us start now to think about plans for our 50th Reunion.

During the past months, we regret to announce, three of our classmates have passed on. Belatedly we announce that **Stanley E. Storey** died on November 5, 1959. He had taken a special course in architecture and lived later at Regina, Saskatchewan, Canada. We have no fur-

ther details regarding his family. . . . **Albert Jerome Hahn** died February 25, 1961. He lived at Memphis and was married on March 9, 1921 to Eve Posert. He was an electrical engineer but did not finish his fourth year. During World War I he became a captain of Coast Artillery and was assigned to the 16th Aircraft Sector. Before coming to the Institute he had already received his bachelor's degree and at that time lived in Mobile, Ala.

Harold Grey Storke died on April 28. He came to the Institute from Amherst College. He later studied at Suffolk Law School and opened a law office in Boston. At Amherst he was a Psi Upsilon, and here he was a member of both the football and baseball teams. He served in the Mexican border campaign and in World War II, both in this country and abroad, presiding at war crimes trials in Salzburg, Austria. He retired as a colonel. After retirement, he became actively interested in figure skating and was a judge and referee at four Olympic competitions. He was secretary of the United States Figure Skating Association and a judge or referee at many competitions throughout North America and Europe. He was married on November 7, 1914 to Edith Munch and they lived for many years in Arlington, Mass. Later he retired to Hull, Mass., where he was interested in civic affairs.—**H. B. Richmond**, Secretary, 100 Memorial Drive, Cambridge 42, Mass.; **C. P. Fiske**, President, Cold Spring Farm, Bath, Maine; **H. A. Affel**, Assistant Secretary and Class Agent, R.F.D. 2, Oakland, Maine.

'15

What a Class Secretary! Before leaving for Europe, I prepared these notes well in advance of the required deadline, so that classmates and our exclusive reading public would have a closing column for this year. . . . **Jack Dalton** commends our class with this expressive letter. "Please give my best to all the gang and especially my deep personal as well as official appreciation for their interest in and generosity to the Institute; 1915 is building up an enviable record in the 50th Fund and Second Century Fund. Of course, all contributions to the Second Century Fund are counted toward the 50th Fund. For the current fiscal year, that is from July 1, 1960 to March 1, 1961, our class has contributed to M.I.T. for all funds a total of nearly \$40,000. Let's keep it rolling." . . . **Phil Alger** sent one of his Christmas poems dated 1939 showing his family as four small children at that time, now all grown up and married. . . . **Bridge Casselman** has not yet retired and says that class dues are little enough to keep our wonderful class cohesive.

What an enjoyable and interesting life **Bob Mitchell** leads when you read this: "I am semi-retired. I make some technical contribution to Magnus Chemical Company, of which I am vice-president and director of research, in spring and fall months. Summers spent on Cape Cod

teaching my six grandchildren to swim, sail and fish; and winters in Florida keeping my old bones warm. My present most interesting activity is organizing and developing a facility (lab and office) and staff in Switzerland to assist and co-ordinate the operations of nine foreign affiliate companies we have developed there. I spent last fall in Switzerland and will go again this year. It is a pleasant and interesting activity, and I expect to continue with it as long as the travelling is not tiresome. I hope that you are well, and still going strong. The year 1915 looks a long way back now, doesn't it?" . . . Another classmate enjoying life, **Herm Morse** writes: "Enclosed is my check for class dues, a rather tiny contribution when balanced against the news your letter gives us each month. It is doubtful whether I will get to Boston for the April dinner as we have reservations in Florida the next week. Since the splendid reunion in June things have been more or less routine except for a quick business trip to England in August. Such a trip is really a quick one now, six hours and 10 minutes from Idlewild to London in a 707. In 1955 I thought 12 hours was really moving along, but such is progress. Fortunately, I planned nothing but business and with 12 rainy days out of 14 it was well that I had. I did get one beautiful drive into Wales on the only clear Sunday and that 200 miles was most enjoyable. Ted Williams wrote 'This is my Last Year' and then decided to play an additional one. In my case age and retirement rules will definitely catch up with me December 1. If I keep my health and make it I will have been with but one company, Goodyear, for the 46 plus years since we graduated. It has been an enjoyable experience. If I don't make it for April hope to see you, perhaps in June."

Maybe some Course IV fellows can cheer **Bill Mellema** who seems to be having a tough time during his retirement. "I have been retired since June 1960. We are living at our beach house, which I am personally remodeling. Have a tendency towards diabetes so must get lots of exercise, but no liquor or sugar. I also have become quite hard of hearing recently. Tough life, Hey what! I had hoped to go to the reunion next year, but unless I get satisfactory hearing aids that will have to be passed up. I have three grandsons now and one granddaughter. Our son, Captain Robert J. Mellema, U.S.A.F., and family, are now in Rio de Janeiro, Brazil, where they like it very much. My best regards to the members of our class, but especially to those who remember me. I would love to hear from them." . . . **Bob Schmucker** says: "Since retiring in 1952 I have enjoyed fairly good health. I usually spend a month in Maine each summer and winters in Hudson, N.Y., where 1960-61 was 'brutal.'" . . . **Vern Stewart**, whom we hadn't seen for a long time until last year's New York class dinner says: "I am by no means having a dull time of it. I am retired and keep so confoundedly busy with things which I have neglected for years, that I sometimes wonder how I found time to go to work. Some travel, plenty of card-

playing, etc., fill in the gaps. And my wife is a theatre fan, and you know what that means. With kindest regards to one and all (as Damon Runyon would say)."

Sam Otis, 516 Walnut Street, Winnetka, Ill., writes: "My grandchildren are growing up in Texas and I am about to retire from the profession of architecture. Outside of my reduced income, all is well. I was recently issued a patent for an 'Automatic Checkout Machine for Supermarkets.'" Sam's technical explanation of the electronic workings of this machine were a little out of my league but, as a supermarket shopper, I can see its advantages and usefulness and wish him success in promoting it. . . . From on board the "Nanette" at Salerno Shipyard, Salerno, Fla., **Dinger Doane** writes: "Your class dinner notice reached me here, forwarded from my Reading address. I'll be sorry to miss it as I have been sorry to miss all of them since we sailed out of Boston Harbor October 31, 1958. We had a cold, wet, windy, rough trip leaving so late. We had the cockpit solidly full of snow in Solomons, Md., and I still have scars on my bow from breaking thin ice in the Chesapeake. However, all that is behind us, and we have enjoyed the nice weather down here since we arrived. With the exception of two months at Delray Beach we spent most of 1960 at the Municipal Yacht Basin, Daytona Beach, a nice clean place, near the stores, beautiful showers, ice and milk delivery, launderette, etc.; everything including water, electricity, etc., costs \$21.60 per month, in what is practically a hurricane proof basin. Lucia has adjusted herself nicely to 'living aboard,' and we have met a lot of nice people from the Chesapeake to Florida whom we meet again and again as they 'tie up' now and then with us at different places on the waterway. Say hello to **Pirate Rooney**, **Frank Scully** and the rest of the old Course I crowd. I'd be glad to hear from some of them." Dinger's address is Raymond O. Doane, 61 Temple Street, Reading, Mass. . . . And so ends this year's column with all the best to you classmates and your families for a lucky and happy summer. Fran and I will be seeing some of you—**Azel W. Mack**, Secretary, 100 Memorial Drive, Cambridge 42, Massachusetts.

'16

Ralph Fletcher starts off with a message: "Now that the 45th Reunion is in the past, we want to say how grateful we are for the way **Steve Brophy** and **Jim Evans** took over the job of making it an event to talk about, Steve as chairman of the reunion and Jim as secretary. It certainly wound up a good class year. **Harold Dodge** has continued to keep us well informed on class activities and doings of individual classmates. **Bill Barrett** and **Joe Barker** are still giving their attention to the Alumni Fund and the 50-year Gift. Jim Evans keeps right after us for attendance at the monthly class luncheons at the M.I.T. Club of New York (Biltmore Hotel, the Thursday after the

first Monday of each month). We expect to continue our interim one-year reunions starting again next June. This has been one way of keeping regularly in touch for the last 10 years. And now best wishes to you from your class officers, and have a fine summer vacation!"

We were glad to have word from **George Sutherland** late in April when he was just about to return to his Connecticut home from a stay in Florida. He notes that since 1952, when the Sutherlands returned from a two-year sojourn in Paris where he was in charge of power for the Marshall Plan, they have been "living quietly in Woodbury, Conn., and spending their winters in warmer climates." They spent two winters in Phoenix, Ariz., and this year have been in Maitland, Fla., "and have purchased a small diggings to which to return next year." "Diggings." We like that! . . . We've had two recent items in which **Walt Binger's** name has been in prominence. Back in February, there were announcements that the organization known as Nature Centers for Young America, Inc., was to merge with the National Audubon Society, and become the Nature Centers Division of the Audubon Society. Ralph Fletcher brought to our attention that **Walt Binger** is and has been for a long time the chairman of the board of Nature Centers for Young America, an organization that sponsors centers in the form of pieces of land close to cities, each piece of land to have a junior museum. For the past 20 years Nature Centers has sponsored and helped localities develop them. The Rockefeller Foundation, Mellon Foundation and others have contributed considerable sums. The activity has been widely effective in establishing living museums, exhibits, and natural science workshops and in stimulating interest in Nature and conservation among the people of the communities involved. The other item on **Walt Binger** is an editorial in the April 11 issue of the New York Times, on the subject of rail passenger transportation, especially the commuter lines. The rail commuter problem, "first seen as a purely local emergency . . . has become recognized as a concern of 'metropolitan areas'" and has "for the first time, become a national problem and is being considered so by Congress." The editorial said further: "A two-part article concluded in this newspaper today emphasizes the danger that the remedy may not only be too late but also too little. This was also a message carried to a Congressional hearing last month by **Walter D. Binger**, a consulting engineer, as vice-president of the Regional Plan Association. He testified that new equipment for a 'truly modern commuter system' should be compatible, to pave the way for an integrated system." **Walt** is also chairman of the Transportation Committee of the Association. This problem has surely affected many of us who use commuting lines from New Jersey to New York. We understand that about the middle of April **Walt** and **Mrs. Binger** left New York with friends on a trip which was to include Hawaii, Japan, Thailand, Cambodia, Ceylon, and Pakistan.

The **Bob Wilsons** had planned to attend the reunion, but along came one of those special events that changed their plans; namely, the award of an honorary LL.D. degree from American University on Sunday, June 11. American University is where **Bob** did a lot of "graduate work" because the labs of the Chemical Warfare Service were located in their just-completed buildings during World War I. They are also located very near his present position in Washington, D.C. This spoiled one reunion-opportunity to have one of those talks that help us to see just where everything stands in these days of turmoil. The **Wilsons** had hoped to arrive on Saturday the 10th. Friday wasn't to be possible because he was to preside at the College of Wooster board meeting then. They expected to go to England in July for about a month, partly on business and partly on pleasure. . . . **Leonard** and **Dolly Stone**, while on a vacation trip, were in a serious automobile accident in March and both were in the hospital in Titusville, Fla., for four weeks. They were able to fly home on April 21. As of early May, **Len** was doing very well, sounded as sharp as always over the phone, while **Dolly**, who was the more seriously injured, was making slow but steady progress in her recovery.

Jack Freeman, in Middlebury, Conn., notes that since he has passed that strange and mysterious age of 65, he finds more time to write than he used to, e.g., for the Class Notes column. He retired from American Brass Company where he was Vice-president of Metallurgy and Research for several years. He continues active, however, for he has been asked to act as Technical Consultant to the Anaconda Company, which is owner of American Brass. This takes him to New York City two or three times a week on the average. He writes: "I do look forward with great pleasure to having more time to play with my grandchildren. We now have 11 to keep us alive and youthful. The oldest is seven so our three children have done well. One daughter lives nearby in Woodbury, Conn., one is in Swarthmore, Pa., and our son is now a production superintendent at Corning Glass Company." On the reunion, he said: "I am looking forward to the 45th and hope to squeeze it in before taking off for Germany and Spain." . . . **Barney Gordon** says that his principal problem "is common to most of us today: trying to fit 36 hours work into 24 hours' time. With a business that is constantly expanding, I have to fight for even a chance to keep up with the daily news." He says most of his extra-curricular activities have had to do with education, with his interest in M.I.T., Brandeis, and Lowell Technological Institute. He has been a trustee of the latter since the late '40's. His greatest joy is "watching the development of seven lively grandsons, the eldest 12 and the youngest 'five going on six.'" **Barney** adds: "The opening of the Centennial Celebration at Tech certainly attracted many of today's outstanding people in scientific as well as in world affairs. It is a pleasure to note with what esteem our alma mater is held by both our own government, other gov-

ernments and other educational institutions. This, of course, is not news to us who prepared for life there close to a half century ago." . . . Your Secretary received a copy of the minutes of an exploratory conference on automation standardization held last September under the auspices of the American Standards Association. **Joe Barker**, who is executive vice-president of OEMI (Office Equipment Manufacturers Institute), took an active part in the conference. Follow-up action on hastening the work of standardizing automation and data-processing items is to be in line with a motion made by **Joe** himself.

The April 24 issue of the Cape Cod Standard Times had an item: "Two Saved Off Cotuit." And who do you think the rescuers were? Right! Here it is; read all about it: "Two unidentified young men were rescued from icy waters off Cotuit Harbor shortly after 2 P.M. yesterday by **Howard P. Claussen** and his son, **Frederic Claussen**. Mr. Claussen received a call from **Leonard Peck**, harbormaster at Cotuit, about 2 P.M. reporting a small sailboat in distress some distance off Cotuit. Mr. Claussen and his son, in the *Schipperke*, their 30-foot Coast Guard Auxiliary facility, left immediately to assist the two. They were taken aboard the *Schipperke* and their sailboat, which was swamped, was towed ashore and beached. . . . The **Claussens** are both members of the Coast Guard Auxiliary. **Frederic Claussen**, a law student at Boston University, is commander of the Wattertown Coast Guard Auxiliary Flotilla. The senior Mr. Claussen is also a member of the U.S. Power Squadron." . . . The **Irv McDaniels** (as of early May) continued their stay in Arroyo de la Miel, Malaga, Spain. **Ralph Fletcher**, on a trip to Europe, had their address. The '15 Class Notes in April mentioned that **Ernie Loveland**, '15, had been spending time there and we've wondered whether he and **Irv** happened to meet. The stories of the two men give some indication that they are about the travellingest men of '15 and '16.

We are sorry to report that near the end of April, **Charlie Lawrance** had a stroke and was confined to the Jordan Hospital in Plymouth but are glad to report that as of this writing (May 3) he is making good progress. . . . **Dick Berger** continues his active work in Cancer Control Through Prevention. He forwarded a little folder that had come to his office, a folder with a message that made **Dick** feel that it had been written just for him. The folder had the title "Satisfaction and Happiness." It was reprinted by the Putnam Management Company, Inc., of Boston (responsible for the two Putnam Funds) and taken from an essay written by **Vannevar Bush**, "Education, Wisdom, and Happiness," on the occasion of the Centennial Celebration of M.I.T., April 10, 1961. It is very good indeed and we can see why **Dick** was so impressed. . . . Another item: On page 15 of the May issue of *The Technology Review*, there's a picture of **Van Bush** at the Convocation in the good company of **Alfred P. Sloan, Jr.**, '95, **James McCormack**, '37, and **John J. Wilson**, '29.

On April 19, **Bob Wilson**, as an AEC Commissioner, was the dinner speaker on the opening day of the two-day dedication ceremonies of the Western New York Nuclear Research Center, Inc., in Buffalo. The \$2.2 million center, located on the campus of the University of Buffalo, was dedicated the next day by Governor Nelson Rockefeller. Included in the center are a research reactor, a linear electron and positive ion accelerator, and laboratories for the study of physics, chemistry, and medicine. As the news release says: "Although designed for use by industry, the center also will support the University's research in biology, chemistry, physics, engineering, and medicine."

... **Ted Strieby**, who retired five years ago from Bell Labs and the A.T.&T. Co., highly recommends the life of relaxation. Says he still owns his home in Millburn, N.J., cuts his own wood for the fireplace, and does the many jobs of repair and gardening around his home. Also does a little consulting to keep up to date and to help ward off the effects of inflation. But he and his wife have particularly enjoyed travelling every year. Last summer Scandinavia was found very rewarding. This past winter they visited their son (Ph.D., M.I.T. '55) and family in California where he is with Hughes Aircraft in Los Angeles on guided missiles "and other matters far beyond my comprehension." From there they visited Palomar and some national parks. Further: "Our daughter and family (her husband teaches music and is involved in opera) lives in Cambridge, so we often gaze with wonder at the new M.I.T. Palaces of Learning. Two grandsons and two granddaughters, split between the East and West Coasts, are great fun but a little strenuous for an old man!" "Traveling again" prevented attendance at the reunion.

Let's slip in a word of appreciation to the many who sent in word in response to requests for "just a couple of lines" even when they had nothing in particular to write about. Such word, for example, came from **Duncan Owler** in Fall River in March, in which he says: "One of the reasons for not replying was due to the fact that I had nothing of interest to report. Correlating information from class members is not an easy task, but I must say that you are doing . . ." etc., etc. Every little bit helps! . . . **Don Webster** continues what he calls a "quiet, pleasant, retired Cape Cod existence," and says he and Eleanor like it that way. Last spring they were in France and Germany visiting two of their four sons, who are still in the Army. Says: "The youngest at 22 comes back from Germany in July and I have the job of seeing him through at least two more years of college. That will keep me from running wild." As for "present philosophy of living," Don writes: "Carpe diem." Those of us who had manual training instead of Latin in High School will have to look that up in big Websters. Don says that when he gets sentimental about Tech he "ponders over the fact that there isn't a stick or stone left standing of the old school on Boylston Street which nourished our minds for four years."

We regret to report the death of **Arthur Keller** in Honolulu on April 8. As outlined in the May 1960 column, he had an illustrious career in Hawaii, starting as a teacher in the University of Hawaii in 1909, later becoming dean of the College of Applied Science, then the University's first vice-president, and retiring as dean in 1948. During the troublesome war years, he served on several occasions as acting president. In February 1960, he was especially honored on the occasion of the dedication of a new building of engineering and mathematics, called the Arthur R. Keller Hall of the University of Hawaii. A note of sympathy has been sent to his widow. Travelling members of the Class of 1916 will have a special reason to visit the Arthur R. Keller Hall when in Honolulu.

We also regret to report the death of **Harvey Stocking** on April 29 at the Bridgeport General Hospital. He lived in Hamden, Conn. Harvey retired in 1959 as a vice-president of the New York advertising firm of Samuel Croot Associates, Inc. As reported further in the Sunday New York Herald Tribune: "Before joining the advertising firm, Mr. Stocking was a member of the advertising department of the old New York World. Surviving are a daughter, Mrs. Robert Redding; a son, Robert C. Stocking; a brother, Willard; two sisters, Mrs. David White and Mrs. John A. Hart, and four grandchildren." Harvey had been a faithful attendee of five-year reunions and we were hoping we might see him again at the 45th last June.

This closes the column for the current season. The 45th Reunion has come and gone. The story will appear in the first issue next fall, in November. Many thanks to those who have sent letters and cards during the past year. The generous response has resulted in generous 1916 notes each month. Best wishes for a good summer and for the kind of vacation you've always wanted to take. So, to keep the column interesting and up-to-date for all '16'ers, write a little but write often. —**Harold F. Dodge**, Secretary, 96 Briarcliff Road, Mountain Lakes, N.J.; **Ralph A. Fletcher**, President, Box 71, West Chelmsford, Mass.

'17

This column of Class Notes, which appears when everyone is busily engaged in summer activities, will not reappear until November, when Thanksgiving will be just around the corner, and preparations will be starting for our 45th Reunion on Cape Cod in 1962. . . . The death of **Russell H. Wheatley**, Brockton, Mass., was announced as of April 19. A newspaper article stated: "Russell H. Wheatley, assistant to the vice-president of Brockton Edison Company, died at his home. He was 64. . . . For years Wheatley served on building committees in the Abington and Brockton areas. He was chairman of the building committee for two Abington grammar schools in 1938. He was trustee and chairman of the Abington Junior High Building com-

mittee in 1950 and a member of the new Goddard Memorial Hospital in Brockton. He leaves his wife, two sons, and a daughter."

Haig Solakian, Sc.D., writes from his home in Pine Orchard, Connecticut: "I am still active as usual in my regular work, that is, manufacturing heat treating electrode salt bath furnaces and compounding various types of heat treating salt baths. These activities, with the problems involved, keep me busy. I am looking forward to attending the 45th Class Reunion in 1962."

Among the random notes are the following: **Stan Dunning**, Assistant Class Secretary, is visiting relatives and friends on the Pacific Coast. . . . **Ray Stevens** is convalescing from a little repair and maintenance work at the Massachusetts General Hospital. By the time this reaches you, he should be enjoying his regular "par" golf. . . . **Dutch du Pont** of Cambridge, Md., married Mrs. Ricky Doris Eleanor Harvey of England in April in Juarez, Mexico. This is the third marriage. . . . We question the wisdom of the recent address change of **Guy A. Gray**, of Palm Beach, Fla. He moved from 235 Sunrise Ave., to 184 Sunset Avenue. . . . For those whose travels this summer bring them to various hotels and restaurants, the following experience of a "Diner" may be of interest: Waiter: "Yes, sir, we're very up to date. Everything here is cooked by electricity." Diner: "I wonder if you would mind giving this steak another shock?"—**W. I. McNeill**, Secretary, 107 Wood Pond Road, West Hartford 7, Conn.; **Stanley C. Dunning**, Assistant Secretary, 1572 Massachusetts Avenue, Cambridge 38, Mass.

'18

As I write, we are boldly lifting ourselves into a new age. The noon broadcast brings the news that the United States has given Commander Shepard a 302-mile trip by rocket, thereby bringing prominence and a small measure of glory to the little town of Derry in my state. This is a far cry from the Russian achievement of successfully putting a man in orbit, despite which we have lifted ourselves. . . . To an even more modest degree **F. H. Norton** was somewhat uplifted by the preparation of a paper on "Ceramics and Architecture in Greece" presented last April at the Toronto meeting of the American Ceramic Society. This was the 63rd annual gathering of an organization which is the largest group of ceramists in the world. Professor Norton is a vice-president of the Society. . . . Also personally uplifted was **Edwin F. Rossman** who was listed in the General Motors Engineering Journal of last March as having contributed two patents at some earlier date. One was for a rod seal for shock absorbers, the other a device to prevent movement beyond a predetermined rate.

Being lifted, or perhaps more accurately, pursuing uplift in an entirely different way, **George Eckwall** has be-

come one of the more publicized burghers of Waltham in consequence of having been made archdeacon of Lowell following his 30-year service as rector of Christ Episcopal Church in that city. George addressed the assembled Boy Scouts at the Waltham Junior High School on Patriot's Day and proudly bore his title of "Venerable" while preaching a Lenten sermon at St. Anne's in Lowell. . . . Through the courtesy of **Max Seltzer**, once again demonstrating the essential goodness of his character, we learn that **Bill Wills** has been through a long and difficult illness requiring professional nurses around the clock. Max has been to see him and reports Bill sufficiently on the mend to be down to one nurse. By the time these notes reach your living-room table we trust Bill will be back at work. But just in case your own good will is as unmistakable as Max's, you can write or visit Royal Barry at 5 Wood Lane, Winchester, Mass.

Edgar W. Huckins has lifted his household from the old Washington, D.C. address to the particularly nice environs of Bow Lake in Strafford, N.H. . . . **Ernest Bridgewater** has completed a more adventurous lift from Wilmington, Del., to 25508 Adobe Lane, Los Altos Hills, Calif. . . . Mrs. **Helen B. Colson** (maiden name undiscovered by my spies but discovered by the editors to be **Byron**) made the short lift from Watertown to 56 Hazelwood Avenue, Longmeadow, Mass. . . . The Magouns are happily home from a business trip which lasted 17 weeks and covered 7,500 miles. . . . Last March **William M. B. Lord** of Valley Falls, Kansas, was lifted into an entirely new and final age. He died on the 9th. No further details available.—**F. Alexander Magoun**, Secretary, Jaffrey Center, N.H.

'20

Many times I have been asked exactly how many members there are in our class. There has always been some question about this because of the fact that we were one of the war classes. We had many dropping out and others coming in after the war. The active class roll as of April 1 was 321. It is interesting to note that a full 40 per cent of the class contributed to the Alumni Fund this year and when you add those who contributed to the Second Century Fund, I would expect the percentage to represent a majority. If you aren't among them, how about making it closer to 100 per cent?

An extremely interesting letter has been received from **Dan Lord**. Dan wanted to explain why he had been unable to attend alumni gatherings of late. He reminds us that last year he was in Israel representing the International Cooperation Administration to help the tanneries in that small country. Dan returned to the U.S. in time to see his youngest son, Robert, receive his Ph.D. at Yale, but not in time for our 40th Reunion. This year he is in Yugoslavia doing similar work with the tanneries in

that country. This work has taken him off the beaten path and close to the native population in both cities and small towns. Arriving in one small village, Dan found that he and Mrs. Lord were the third and fourth Americans ever to stay there and that in cities as large as 85,000 population, they were the only Americans there. He writes: "There are many beautiful spots in Yugoslavia: the Adriatic shore, the mountains to the north in Slovenia, the many beautiful lakes and rivers and mountains south and west of Belgrade. The Plitvice Lakes make a beautiful string connected by tumbling cascades and waterfalls. The water is the color of aquamarine and is so saturated in calcium carbonate that it seems to crystallize out on all the fallen branches. The whole area is a national park, and walking paths are numerous. Partly because automobiles are scarce," Dan says, "the railroads are installing American Diesel locomotives to help maintain train schedules. There is a law in that country that imposes a fine on the railroads for each minute a train is late. The highways linking the large cities are paved with granite blocks." Ancient castles are numerous, and Dan visited one in northern Croatia which housed Austrian nobility for as far back as 800 years. Dan comments: "This castle is a fine example of the artistry of fine, hand cut wooden beams and intricate carvings in both stone and wood. Most of the ceilings and some of the walls are paneled of wood designed to accentuate the natural beauty of the grain of the native oak and chestnut. The furniture is massive but delicately inlaid with contrasting colored woods." He also visited a castle in Karlovac which had been restored and made into a hotel and museum. Says Dan: "There are 300 steps leading to the castle. Happily, however, on the journey upward one meets with a small chapel at the halfway mark, a perfect place for the weary pilgrim to rest his soul and his feet." Dan goes on to say that the Voice of America can be heard on short wave from Tangiers and on regular channels from Munich. American popular music is everywhere, and one young lady has an uncanny knack of imitating Pat Boone and Perry Como, accompanying herself on the guitar. She has become a national favorite. Dan says that over there the winter has been mild with very little snow and temperatures above normal, in contrast to our rough New England winter. He sends warm regards to all classmates.

A welcome note has been received from **Henry Blau**. Henry, who is vice-president in charge of production and development for the Federal Glass Company, Division of Federal Paper Board Company, Columbus, Ohio, writes: "In spite of a long, active and interesting career, this is the first occasion on which I have passed along to you any notes. My son, Dr. Henry H. Blau, Jr., represented Ohio State University in the ceremonies connected with the M.I.T. Centennial Convocation." Thanks, Henry, do let us hear from you again. . . . **Flossie Buckland** says she attended a summer program at M.I.T. last year on "Engineering Aspects of the Solidification of Castings."

With typical verve, Flossie adds, "When I am not a foundryman, I am a machinist. When I am not a machinist, I am a devotee of conduction of heat in solids." . . . **Ray Perry** has moved from New York City to Butler, N. J., and his glamorous address is Ski Trail-Smoke Rise. . . . Your Secretary had a delightful visit lately with **Homer** and **Vera Howes**. Homer was in Boston attending a meeting of the Visiting Committee for the M.I.T. Library. He is retiring from Bemis Bag and spending the next four months in Europe. On his return to St. Louis in the fall, he expects to keep busy and active. Among other things, he has been made a trustee of Fisk University, Nashville, Tenn., and has been elected vice-chairman of the board of trustees. I am happy to give a good report of this illustrious and loyal member of the class and his charming wife.

The death of **Ed Brickett** on April 15 was widely reported in the newspapers. **Ken Newhall** was thoughtful enough to write me about it. Ken and Ed had been schoolmates together in Lynn. Ed lived in Minneapolis and was president of Construction Chemicals, Inc., St. Paul. After graduation with us he received a master's degree from the University of Illinois, and lived in Marblehead for many years before moving to Minneapolis. He was a nationally known authority on concrete and concrete design. Ed leaves his wife and two sons. He was a popular member of his class and one of whom we could all be proud. We shall miss him sorely. Ken Newhall also tells me that **Paul M. Berko** passed away suddenly not long ago. Paul lived in Lynn. Ken lives at 21 Rock Avenue, Swampscott. His son and daughter each have a little boy and his daughter recently gave him a beautiful little granddaughter. At the time of writing he was expecting that his daughter-in-law would give him another grandchild and hoping it would balance up the family by being another girl.

Bill Dewey phoned to tell me of the death of **G. Harold Hopkins**. Harold had been a resident of California for 55 years and of Laguna Beach for the past 10 years. He is survived by his wife, Marguerite. Their home was at 910 Skyline Drive.—**Harold Bugbee**, Secretary, 7 Dartmouth Street, Winchester, Mass.

'21

It's over! But our 40th Reunion and Technology's Centennial Alumni Day last month will always remain as bright memories in the history of the Class of 1921. We hope you were able to attend, that you thoroughly enjoyed these two major events and will continue to participate in those class gatherings which are scheduled to follow. If you couldn't be there, watch for details of the eventful occasions in the November issue, in which our monthly meetings on these pages will resume with the appearance of this first issue of the 1961-62 volume of *The Review*. Perhaps a reminder is in order to make certain that you have contributed

to the annual Alumni Fund or the Second Century Fund so that your Review subscription will automatically be extended through the coming season.

Flemmon P. Hall was given the highest honor that American ceramists can bestow, and a distinction attained by few, when the April convention of the American Ceramic Society in Toronto named him "Honorary Member" at appropriate ceremonies. The award was presented in recognition of his contributions to the ceramic industry and his service to the society. A graduate, magna cum laude, of Vanderbilt, Flemmon received his master's degree in Course X with us and then continued his studies to obtain his doctorate from Technology in Course V in 1925. From 1924 to 1925, he was an instructor in geology at the Institute. He is now director of research, Onondaga Pottery Company, Syracuse, N.Y. He serves as consultant to Pass and Seymour, Inc., of Solvay, N.Y., and to the Onondaga Electronics Division of Speer Carbon Company, Syracuse, with whom he had also been director of research. He is married and has a son and daughter. . . .

Lengthy notices have been received, detailing the many speaking appearances in Boston and elsewhere in New England of **John W. Barriger, 3rd**, President of the Pittsburgh and Lake Erie Railroad. Jack, who termed himself "a modern Paul Revere," rode his iron horse to awaken the countryside to the need for freedom of the rails to operate competitively against other transportation media if railroads are to continue as privately supported enterprises, or even to survive at all. He advocated a 10-point package, a "1961 Emancipation Program," which is endorsed by some 34 Eastern railroads as a necessity, not only for survival, but for the development of better railroading as well. Jack's dynamic approach prompted one writer to comment that his ruddy cheeks and healthful appearance belie his age. I wonder what he would have said about Jack's wielding a shovel in formal dress not long ago, when an emergency call brought him to the scene of a serious washout that threatened service on his line.

Increased productivity abroad, coupled with higher standards of living, were cited by **Saul M. Silverstein** as objectives of American management personnel towards winning the cold war, in a recent talk to members of the University of Hartford chapter of Epsilon Alpha Zeta, honorary business fraternity. Saul has been active in the foreign business assistance program of the Council for International Progress in Management. . . . **W. Robert Barker** gives his home address as 5755 Beattie Avenue, Lockport, N.Y. . . . **Robert S. Cook** and **Edward W. Noyes** are two of the regular commuters who winter in Florida and migrate North for the summer season. Bob has left his Fort Lauderdale home to return to 326 East Lake Road, Canandaigua, N.Y. Ed has traveled up from Pompano Beach and can be reached at R.D. 2, Lake Coxton, Thompson, Pa. . . . **Kenneth A. Moores** reports his current home address as 1118 37th Avenue East, Seattle 2, Wash. . . . **Sumner** and **Betty Hayward, Joe** and

Dorothy Wenick, and **Cac** and **Maxine Clarke** attended the dinner meeting of the M.I.T. Club of Northern New Jersey. Sumner is very active in his retirement, including the New Jersey area chairmanship for the M.I.T. Second Century Fund in his activities. Joe, who was re-elected treasurer of the club for the 'steenth time, also finds room for many extracurricular activities. He recently served as a judge at a science fair in Bayonne, N.J., and at the Hudson County science fair at the Jersey City State College. He has been named to a committee formed by the Jersey City Chamber of Commerce to study the performance of the local sewage treatment plant.

Like Sumner, many members of the Class of 1921 are active in assuring the success of Technology's Second Century Fund. In the top echelon are El Paso Area Chairman **Romney J. Mellen** and Honorary Chairman for Oklahoma **William J. Sherry**. The latest Alumni Directory lists others who are active in Institute affairs, including **Mich Bawden**, who represents the M.I.T. Association of Cleveland on the Alumni Council; **George Chutter**, who represents the Northern New Jersey club; **Josh Crosby**, Bangor; **Frank Kittredge**, Monterrey, Mexico; and **Ace Rood**, Indianapolis. **Fred Adams** is an Alumni member of the M.I.T. Departmental Visiting Committee for Chemistry, **Andy McKee** for Naval Architecture and Marine Engineering, **Bob Moore** for Economics and Social Science, and **Joe Gillson** for Earth Sciences.

. . . **Wally Adams** serves as treasurer of the M.I.T. Club of the Miami Valley, Dayton, Ohio; **Joe Wenick** is treasurer of the M.I.T. Club of Northern New Jersey; **Palmer Scott** is vice-president of the Technology Club of New Bedford, Mass.; and **Jung A. Lo** is president of the M.I.T. Club of Taiwan. Honorary secretaries of the Institute and educational counselors in various areas include: **Sam Lunden**, Los Angeles, Calif.; **Ray St. Laurent**, Hartford, Conn.; **Ed Farrand**, Leesburg, Ga.; **Harry Field**, Honolulu, Hawaii; **Cac Clarke**, Sumner Hayward and **Joe Wenick**, New Jersey; **Irv Jakobson**, Oyster Bay, N.Y.; **George Welch**, Poughkeepsie, N.Y.; **Ray Snow**, Raleigh, N. C.; **Wally Adams**, Middletown, Ohio; **Si Freese**, Fort Worth, Texas; **Gene Rudow**, Seattle, Wash.; and **George Pollock**, Milwaukee, Wis.

It is with deep sorrow that we record the passing of **Kenneth Bruner Skardon** at his home on Upper Valley Pike, Route 4, Urbana, Ohio, on January 14, 1961, and express to his family the sincerest sympathy of the entire Class of 1921. Ken, or K. B., as he was known to his many close friends in the class, was born in Springfield, Ohio, on November 16, 1894, and attended Wittenberg and Ohio State before joining us in the junior year. At the Institute, he was president of the Civil Engineering Society in both junior and senior years and a member of Beta Theta Pi. He was graduated with us in Course I and went on to obtain his master's degree in Course I in 1925. A registered professional engineer, Ken was well known for many engineering accomplishments. He was the consulting engineer

for the deep foundations of the Cleveland Terminal Tower building and represented Crowell-Collier Publishing Company in the engineering plans for its extensive Springfield building. He had been a consulting engineer on the staff of the Wendell P. Brown Company of Cleveland and on the staff of United Engineers and Constructors and the Hercules Powder Company. Most recently, he had represented the engineering phases of the Department of Industrial Relations, Division of Factory and Building Inspection, of the State of Ohio. His memberships included the American Society of Civil Engineers, Anthony Lodge No. 455, F.&A.M., and the Triangle Engineering Fraternity. In World War I he served overseas as a first lieutenant, 324th Field Artillery, from 1917 to 1919, and saw action in the Meuse-Argonne offensive. In World War II, he served two and one-half years as lieutenant commander, Civil Engineer Corps, U.S. Navy and was with the Seabees in the Iwo Jima assault. It was a source of special pride that an unpublished paper of his was used extensively in the book by Professor Charles M. Spofford '93, "The Theory of Continuous Structures and Arches," which credits his authorship. Survivors include his wife, Mary Altick Skardon; three sons, James, of Wilton, Conn., who is executive editor of "Coronet Magazine," William and Philip of New York City; a sister, Miss Ruth Skardon of Springfield, Ohio; and three grandchildren. We are indebted to Mrs. Skardon for assistance in preparing these notes.

On behalf of all of your class officers and committeemen, we extend to you and yours best wishes for a most pleasant summer. In advance of the resumption of our monthly gatherings on these pages when the next issue appears in November, please write to your secretaries and ensure that we have material of interest to your friends with which to maintain the regular appearance of these notes. To plan ahead, note that the date of the next meeting of the class will be on Alumni Day in Cambridge and arrange to be with us then, June 11, 1962. Happy days!—**Carole A. Clarke**, Class Secretary, International Electric Corporation, Route 17 and Garden State Parkway, Paramus, N. J.; **Edwin T. Steffian**, Assistant Class Secretary, Larsen, Steffian, Bradley and Hibbard, 711 Boylston Street, Boston 16, Mass.

'22

This is the summer period in which to get a good rest while waiting breathlessly for June 7-10, 1962 for our 40th Reunion at the New Ocean House in Swampscott. Make plans for it now. . . . **William H. Mueser**, partner, Moran, Proctor, Mueser and Rutledge, spoke before the Boston Society of Civil Engineers in April on the subject "Design and Construction of Bremerton Base Drydock." Bill certainly covers the waterfront. . . . **Oscar Horowitz**, internationally famous amateur photographer, stopped in Buffalo in April to show his prize-winning films to the Buf-

falo experts. His demonstration was received with many compliments. . . . The Alumni Fund report includes a high place for the Class of '22, but next year it will be astronomical. . . . **Earl H. Eacker**, President of the Boston Consolidated Gas Company, has been considered as a member of the Boston Redevelopment Authority. Buck has been president of Boston Gas since 1948. . . . **L. F. Hickernell**, vice-president, engineering, for the Anaconda Wire and Cable Company, has been elected to a four-year term on the Engineering Foundation Board. Hickernell is a fellow and past president of the A.I.E.E. and is a member of the Institution of Electric Engineering (British). . . . **C. Yardley Chittick** represented George Washington University in the Convocation Procession of the Centennial Celebration.

A very fine speech entitled "Respect Must Be Earned" was given by **Donald F. Carpenter**, general manager, Film Department, E. I. du Pont de Nemours and Company for the Rotary Club of Florence, S. C., in April. A letter from Don regarding various classmates follows: "**Barrett (Hinie) Hindes** picked me up in his wife's good-looking Jaguar, which he had stolen for the occasion, in San Francisco on Sunday, March 12. We drove to his place, which is perfectly delightful, and had an excellent visit with his good wife and her brother. I was delighted to find that she and I are remote cousins. Hinie has nominally retired from active business but says he is busier than he has ever been before. As you probably know, he is one of the top philatelists in the country and has some extraordinary items which he has been called upon to show. I hope he will come on to reunion next year. . . . I had hoped to see **Mac McCurdy** in Seattle, but being unable to go there I talked to him at some length on the phone from San Francisco. He says he is 'keeping shop' while his son is taking a refresher course at M.I.T. Mac sold out part of his business, the Puget Sound Bridge and Dredging Company, to Lockheed and is a director of Lockheed. He says he is coming to the reunion next spring. It will certainly be fun to see him. . . . In Los Angeles, **Barton Jones** picked me up in another good-looking Jaguar and drove me to **Bryant Essick's** house where we boarded his power cruiser and went out over the Pacific to Catalina Island. Bryant's son was a most efficient first mate. We moored in Avalon Harbor and had a good trip in a very small open automobile over accessible parts of Catalina Island. The next day we cruised up the coast to see the freighter on the rocks off Palos Verdes and then back to Bryant's home port. Bart Jones has been recorded in the Class of '23 in the past but that will be corrected as he is much more logically associated with the Class of '22. I hope that he and Bryant may also be on hand at the reunion. Bart runs the Barton Instrument Corporation and travels around this country and Europe extensively. Bryant runs the Essick Manufacturing Company with plants in Los Angeles, Little Rock, Ark., and Elizabeth, N.J., and with contacts both commercial and governmental pretty much every-

where."—**Whitworth Ferguson**, Secretary, 333 Ellicott Street, Buffalo, N.Y.; **C. George Dandrow**, Assistant Secretary, Johns-Manville Corporation, 22 East 40th Street, New York 16, N.Y.

'23

These are the last Class Notes until fall. Your class officers sincerely hope that you all have a very pleasant and enjoyable summer. . . . President **Stratton** was honored in April when he received the Faraday Medal of the Electrical Engineers in London. The award, 39th to be given by the British Institution, went to Dr. Stratton "for his notable contributions in the fields of technological education and research in radio communication." It was presented on the occasion of the Kelvin Lecture. The Faraday Medal is awarded not oftener than once a year, either for scientific or industrial achievement in electrical engineering or for conspicuous service to the advancement of electrical science. Others who have received the award include Ernest O. Lawrence, Irving Langmuir, Sir John Cockcroft and Sir George Thomson. . . . **John Burchard**, Dean of Humanities at the Institute, was chairman of one of the panels that met at Harvard on April 14 and 15. The conference was sponsored by the Harvard Graduate School of Design, and its subject was "The Institution as a Generator of Urban Form." The purpose was to discuss how universities, hospitals and other large institutions can assist urban development.

Mrs. Morton S. Webster is a partner in the firm of Edelbaum and Webster, architects of New York City. They have just completed drawing of the Roberts Moore Houses for the New York City Housing Authority. Mrs. Webster serves as chairman of the House Consulting Committee of the New York chapter of the A.I.A. . . . The April issue of the Cities Service Oil Company Ltd., publication included a picture of our **Bob Hull** receiving an award for leadership in water pollution control from the Honorable Robert Macaulay, Minister of Energy Resources, Province of Ontario. Bob is president of Cities Service Oil Company, Ltd. and Cities Service Refining (Canada) Ltd. . . . The April 4 issue of The Hartford Courant had an article about **Frederick Almquist** being named to head the Sanitary Engineering Division of the State Health Department. Fred has been with this division since 1926 and has been chief of the Water Supplies Section. Fred is a past president of the New England Water Works Association. He also is past president of several Wethersfield clubs, such as the Business Men's and Civic Association; the Colonel John Chester PTA, and the PTA Council. He has also been active in local Boy Scout activities.

James A. Pennypacker completed 25 years with the Bethlehem Steel Company, and was honored by the Long Service Club on May 9. Pete has been in shipbuilding for 44 years, the last 25 years with Bethlehem at Fore River. He

is currently manager of cost estimating and his work covers the 11-yard shipbuilding division spread along the Atlantic, Gulf and Pacific Coasts. Pete has had quite an interesting career. In 1917 he entered the industry in the yard of the New York Shipbuilding Company, Camden, N.J., and two years later became a student at M.I.T., Cambridge, working his way through and returning each summer to the Camden Yard. After graduating he joined the Cramp Yard in Philadelphia in the Ship Scientific department for four years. In 1927 he joined the Marine Engineering Corporation, Philadelphia, of which Fore River Yard was a member. Next he went to Washington, D.C., to represent the National Council of American Shipbuilders in preparing for the International Conference on Safety of Life at Sea held in London in 1929 and at which Fore River was represented. Following seven years in New York with the Shipbuilders' Council, he joined the Bethlehem Steel Company, Shipbuilding Division, and came to Quincy in 1936 to work in the estimating department at Fore River Yard.

Robert C. Sprague, Chairman of the Board, Sprague Electric Company, was recipient of the 1961 "Gold Knight Award" given by the New England Area Council of Management Clubs at Salem State College in May. . . . **Milton E. Parker** resigned as professor and director of Food Engineering of Illinois Institute of Technology on June 15. He is going to continue his consulting practice specializing in caloric density control of foods as well as special pharmaceutical research developments in health security aspects of radioactive contamination such as individuals might be subjected to as the result of "fallout," etc. Milton was also presented with a citation as counselor and teacher by the Alumni Association at its annual meeting in May. His office will be in Room 1125, 135 South LaSalle Street, Chicago, Ill. . . . We regret to report the death of **Bill Webster's** wife, Eleanore, in April in an auto accident in Hampstead, N.C. Bill was injured, suffering lacerations of the face and scalp and a compound fracture of the left arm. Our sympathies go to Bill in this tragic accident and trust that his injuries have healed by this time. Incidentally, Bill is president of the Yankee Atomic Electric Co., and New England Electric.

We wish to report the following address changes: **Michael F. Boyle**, 445 Converse Street, Longmeadow, Mass.; **VanCourt M. Hare**, 140 Beacon Street, Boston 16, Mass.; **Batist R. Haueisen**, R.R. #16, Box 374 New Augusta, Ind.; **Charles H. Toll, Jr.**, 526 Hermosa Street, South Pasadena, Calif.—**Herbert L. Hayden**, Secretary, E. I. du Pont de Nemours & Company, Leominster, Mass.; **Albert S. Redway**, Assistant Secretary, 47 Deepwood Drive, Hamden 17, Conn.

'24

Only last month we had the unhappy duty of reporting the death of Kay Barrett. This month we are even more un-

happy to report the shocking news that **Frank Barrett** has followed her. He died in his sleep on the night of May 13. With the N.E. Telephone and Telegraph Company since graduation, Frank had been, in turn, advertising manager, publicity manager, southern division manager, assistant vice-president for sales and, for the past two years, public relations. Since returning to Boston from the southern division, the Barretts had lived on the South Shore in Cohasset. The class has lost a loyal and devoted couple. We shall miss them. The sympathies of us all go to the girls.

Today, May 15, the temperature in Cambridge is in the 90's. Two days ago we were sleeping under blankets as usual and wondering if the buds were ever going to open. Now, presto! Everything's in bloom all at once and the trees are all leafed out. A card from the **Henningers** said, "Living in Coral Gables with a daughter 'til spring arrives up north." Rather think they're in a dilemma. This is the year we bypassed spring! . . . We told you about the Reverend **Gertrude Harris** and the fact that her card said she is director of the **AWAKE** Department of the Koinonia Foundation. Now comes a news story that spells it all out. "Koinonia is a non-denominational training center which seeks to get religiously motivated technicians, teachers and other specialists into areas of need overseas." And awake is one of those initial words that invariably requires a lot of ingenuity to fill out. This one is America's War of Amazing Kindness Everywhere. That is ingenuity! . . . Another honor for our Anatole. The New York State Society of Professional Engineers announced that **Dr. Anatole R. Gruhr, P.E.**, was to receive the Honor Award for 1961 of its Kings County Chapter "in recognition of his outstanding contributions to the Engineering Profession and his dedicated service in the field of Engineering Education."

General chairman of this year's annual meeting of the Drug, Chemical and Allied Trades Association: **Griffin Crafts**. Last year's chairman: **Paul J. Cardinal**. Looks like the boys have this outfit sewed up. . . . Among those attending the big Rotary do in Tokyo were the **Clinton B. Conways** of Baltimore. The Tokyo M.I.T. Club invited them to be its guests at their Centennial Celebration in late May, so Clint took off loaded down with magnetic tapes, slides, and assorted items of the Institute's big show in April. . . . A nice note from **Gordon Billard** tells of one of his major interests that is new to us. For some years he has been active in the New York Academy of Sciences. Founded in 1817, "it has developed into one of the more important international bodies devoted to the advancement of scientific research and discovery." Bill is a trustee, and is keeping an eagle eye on the new big science center the Academy is now building.

The Reverend **James C. L. Wong**, new Assistant Bishop of the Diocese of Borneo, put in a busy first year. It was so busy in fact, what with being Rector of Jesselton and Principal of All Saints' School, not to mention long trips by air, rail,

launch and dugout canoes into the interior, that Jimmie's doctor ordered him to take a long rest. By autumn he was able to do it, and returned to Hong Kong where the Wongs spent Christmas and had a series of family reunions. Interesting circumstance, typical of today's contrasts: while Jimmie was carrying the gospel to the natives back in the interior, one of his sons, David was in charge of programming and constructing SNO-CUM, a digital computer for the Snowy Mountain Hydro-Electric Authority in Australia.

And now for a brief rundown on the flying **Lehrers**. Latest word was from Karachi, but before that they'd been to a major cocktail party in Calcutta (Rajahs, Maharajahs, etc.); gone to Ceylon where they saw an elaborate Hindu wedding, fire dancers, more temples, 30,000 bats hanging from trees, and a tea factory; camped in a game preserve which was surrounded by a moat so the elephants wouldn't tramp over them in the night ("it was a very restful spot"); seen more dancing at the Governor General's home in Cochin; seen still more dancing (gypsies, this time) at Hyderabad; seen the Silent Towers in Bombay where the dead are placed to be devoured by vultures; and toured the Cages, Bombay's red-light district. Ray cautiously stated that "Dot and I" made the tour. In Jaipur they had cocktails with the Maharajah, the same one who took the Queen and Philip tiger hunting. The Lehrers got to ride elephants, but didn't get invited to go after tigers. They saw the Taj Mahal at all hours of the day and night. "It turned out to be just as lovely as all the stories would indicate, a real gem." Maybe you remember, but the emperor who had it built about 1630 wanted to make sure no one else had such a beautiful building, so he had the architect killed when it was done. Then they went to Khyber Pass and called on one of the local chieftains, surrounded by villainous well-armed retainers, met great numbers of American airmen in Afghanistan, all in civilian clothes (this is where the U-2 took off from), spent several luxurious days on a houseboat, and eventually got to Karachi where they had more cocktails with an old friend of your secretary's, a State Department gal they looked up.

It's a shame to leave the Lehrers literally in mid-air, but here it is, last issue of the season, and by the time we're back in business next fall the rest of their trip will be ancient history. However, they've taken lots of pictures, and guess what Ray will be doing at our next reunion. . . . A good summer to you all.—**Henry B. Kane**, Secretary, Room 1-272, M.I.T., Cambridge 39, Mass.

'25

It is with regret that we announce the death of two classmates. **James T. Adams** graduated in Course VIII, and news of his death reached your secretary just recently, although he passed on some time in March of 1960. At the time of his death he was living in Gaithersburg, Md. . . .

Dwight H. Marsh, President of the Champion Lamp Works in Danvers, Mass., died suddenly on April 20, 1961. Immediately following graduation, Dwight became associated with the Lamp Company which was operated by the Marsh family, and in recent years he headed this company. He had many other activities, being a director of the Security Trust Company of Lynn, Mass.; a member of the corporation and investment committee of the Lynn Five Cent Savings Bank; and a past president of the Lynn Rotary Club. He was also active in the Essex County Electrical Association and the Society of Illuminating Engineers. As an active member of the Salem Country Club, it was his duty each year to fire the cannon that marked the opening of the golfing season there, and he had presided at this traditional ceremony only a few days before his death. He was much interested in yachting and held membership in the Corinthian and Boston Yacht Clubs at Marblehead; and was a member of the Marblehead Power Squadron and of the U. S. Coast Guard Auxiliary.

It is much more pleasant to report that **Dr. Kenneth T. Bainbridge**, a recognized authority on radioactivity, has been named as Harvard University's first George Yasmer Leverett Professor of Physics. This professorship was established in 1958 with funds left to Harvard by the late Mr. Leverett, a graduate of Harvard College, Harvard Law School, and a lawyer with the Bell Telephone Companies. Ken, of course, is known widely for his research in radioisotopes and for improved methods of accurately determining the weight of atoms.

. . . **Maxey Jarman**, known to many of you, was honored by the Shoe and Leather Division of the 1961 Appeal of the Combined Jewish Philanthropies in Boston at a meeting last March. . . . Those of you who were present at the 35th Reunion about a year ago will recall that **Mary Tripp** (Mrs. Lynwood A.) suffered a serious fall. A postcard from her recently indicated that she was laid up for six months as a result of this fall, which I am sure most of you will be sorry to learn. . . . This being the last report prior to the summer months, your secretary wishes you all a pleasant summer, and reminds you that a letter now and then from you would help to keep these notes more interesting!—**F. L. Foster**, Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

'26

Once again these notes are not being written at Pigeon Cove but the locale is a bit more relaxed than aboard a jet plane. It is not quite 7:00 A.M. and your secretary is writing on the arm of a lawn chair on a terrace overlooking the sea at Bermuda. A couple of Canadian destroyers are steaming away on the horizon, having been tied up at the pier in Hamilton harbor for the past few days. The early morning sun is most relaxing, and there is just one hour before the maid comes

down over the hill with our tray of breakfast that we ordered last night.

Several classmates saw the story about **George Leness** that I reported last month. **Guy Frisbie** sent us a nice note about it with a clipping from the Wall Street Journal. . . . The most unusual clipping was one sent us by **Howard Humphrey**. Howard clipped a story from the New York Herald Tribune about **Dick Pough** and after cutting it out he happened to turn it over and discovered George Leness' picture and a part of the story of his promotion to President of Merrill, Lynch. The Class of '26 is really becoming famous when its members are written up on both sides of the same page of a New York newspaper. The clipping about Dick Pough tells of a new honor, the Francis K. Hutchinson Medal of the Garden Club of America for his service in the field of conservation.

Here's an item written in the Cleveland airport while waiting for a flight to Louisville: I just phoned **Bill Sessions** and waited for him to finish a phone conversation. It turned out that his phone call was with **Bill Kelly** in Muncie, Ind. Bill said that while it had been a business call, they did discuss plans for seeing each other at the reunion. Bill also mentioned that he had received a letter from **Frank Schreiner** who is now living in Fort Lauderdale, Fla., and selling Owens Yachts. Sounds like a semi-retirement activity. Frank was checking on reunion plans since his new address had not caught up with us. . . . While in Louisville I phoned **Al Entwistle**, who is now listed in the phone book as Entwistle Company. He was out of town so I later phoned his home and again missed him but did talk with Mrs. Entwistle who advised that Al is in a new business; he is now a restaurateur and innkeeper with two Howard Johnson restaurants plus a Howard Johnson motel. Sorry to have missed Al because it did not sound as though he would make the reunion.

I have just been looking at some address changes which have implications, but I can tell you no more at present. I'll let you guess, too, until the classmate writes us. . . . **Dorothy Quiggle** has changed from State College, Pa., to Department of Chemical Engineering, Pennsylvania State University, University Park, Pa. . . . Here are a couple of addresses that are not new, but I do not know what these men are doing at these locations: **Albert C. Warner**, Box 4486, Santa Fe, N. M., and **Leroy B. Copley**, 3017 35th Terrace, South, St. Petersburg, Fla. . . . Incidentally, if any of you wonder what has happened to any particular classmate, I'll be pleased to look it up and publish it in the notes. . . . Our next-door neighbors just came up from the beach after an early morning swim and I can see our breakfast approaching. It's fresh Bermuda strawberries, pancakes, bacon and strong black coffee. So finis, and don't forget the Pigeon Cove address; at least give us a ring if you are nearby. Otherwise be sure to send a note or even a postcard.—**George Warren Smith**, Secretary, c/o E. I. du Pont de Nemours & Company, 140 Federal Street, Boston, Mass.

'27

The Institute recently advised of a change in address for Brigadier General **William R. Frederick** from an APO in New York to Aledo, Texas, so we wrote to him, and a prompt reply reveals the following: "I have just returned from a year of travel throughout Western Europe and Turkey. This travel was the realization of an ambition of some long standing. It further fitted into my interest in archeology and ancient history as a kind of hobby. I am now looking for employment in the States. Should I find nothing prior to next fall, I plan to enter a university for work in the fields of archeology and ancient history." Here is the interesting summary of a portion of Bill's career: In August of 1952 he became executive officer of the 7th Infantry Division Artillery in Korea. The next nine months were very active ones while the Division Artillery fought many actions in the sectors near Kumhwa and west of Chorwon. He was awarded the Legion of Merit for this duty. The combat service was followed, beginning in May, 1953, by almost five months' duty as special services officer of the Eighth Army. This period was one of great activity and revitalization in the field of recreation and entertainment and in planning construction and recreation centers and facilities to provide for the new role of the Army after the ceasefire of July, 1953. One of the primary problems at this time was the Post Exchange service to the troops. He served on the Far East Exchange Council as the Eighth Army representative in the conduct of this \$100 million yearly business. He was awarded the Oak Leaf Cluster to the Legion of Merit for his duty as special services officer. He returned to the United States in October 1953, earned his jump wings at Fort Benning in December just before his 49th birthday and returned to Japan in January. He assumed command of the 24th Infantry Division Artillery in Korea in September of 1954. He returned to the United States for duty on the Department of the Army staff. As deputy assistant chief of Staff, G-2, Foreign Operations, he was responsible for a large part of the intelligence activities of the U.S. Army during the period from May, 1955, until August, 1957. In August, 1957, he assumed command of the V Corps Artillery in West Germany and continued as commander of this strong force of missile and tube artillery until March of 1959. Thereafter he was the Seventh Army Artillery Officer until his retirement on March 31, 1960. At retirement, General Frederick was awarded the second Oak Leaf Cluster to the Legion of Merit."

The March Newsletter of the Second Century Fund reports that the S.C.F. is "over the hump," past the halfway mark toward \$66 million. Several large gifts have brought the fund to more than \$33 million. S.C.F. calls for considerable "getting together" by Alumni, and planning conferences have been held in preparation for the general appeal, during which fund workers will talk with all

Alumni about this. We see that **Howard P. Ferguson** is pictured in this issue at the head table of the Cleveland meeting.

The election of Dr. **Howard W. R. Biers**, of New York, internationally distinguished metallurgist and consulting engineer, as an honorary vice-president of the Iron and Steel Institute, London, was announced in New York coincidentally with his designation by the American Institute of Mining, Metallurgical, and Petroleum Engineers as its representative at the annual general meeting of the British organization the early part of May. Dr. Biers, who is a consultant to the Union Carbide International Company, is an honorary life member of the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME). He has been an honorary member of the British organization since 1955. Recipient of many awards here and in other countries, he was informed by the Iron and Steel Institute, of Britain, that his election to honorary vice-president, "a somewhat exceptional distinction," was in appreciation of his activities in its behalf through the years. He is its first American honorary vice-president since the death in 1943 of James Farrell, President of U.S. Steel Corporation. Dr. Biers, who lives in Norwalk, Conn., has been engaged extensively abroad as a Union Carbide representative, in addition to many activities in the United States for the company. He began in 1927 as a metallurgist in the Union Carbide and Research Laboratories.

We have the Progress Report as of March 31 showing latest contributions to the 1961 Alumni Fund, and our class is doing well with an average contribution of \$161. This compares with \$71 for the Class of '25, \$44 for the Class of '26, \$36 for '28, and \$39 for '29. Our average contribution to date for 1961 is considerably better than that of 1960, which was \$76 for our class. The fund year ended on June 30.

In a recent news release on Hancock Telecontrol Corporation, we note that **Robert W. Hancock** is shown as a member of the Board of Directors. This is a new company formed in December of last year when it acquired the Telecontrol Division of Hancock Industries, Inc. It manufactures and sells Telecontrol which is an automatic input data collection, monitoring and communications system, designed to continuously provide management with constant central control of production. Telecontrol makes available the pertinent facts and communications means for more efficient operation of today's complex manufacturing plants. Bob is also chairman of the board and president of Hancock Industries, Inc., Jackson, Mich., maker of auto parts. . . . In looking through the March-April issue of the "M.I.T. Newsletter-New York," we note some interesting items. In a listing of new members who have recently joined the M.I.T. Club of New York, we note the name of **Benedicto Padilla**. Also, **James A. Lyles** is mentioned as an active participant of the Investment Club started by the M.I.T. Club of New York.

It is with regret that we announce the

death on March 15 of **Brown V. Voorhees** at La Jolla, Calif., where he lived, to our knowledge, for the last 15 years. . . . We note from a recent news release that **S. S. Auchincloss**, President of Tracerlab, announced that the company's Reactor Monitoring Center in Richmond, Calif., has received a \$334,384 contract from the Navy Department, Bureau of Ships, to manufacture 58 Air Particle Monitors. With the awarding of this contract, Tracerlab now has contracts for 91 of its Air Particle Monitors totaling approximately \$557,000. This equipment is installed on board nuclear-powered vessels to indicate concentration of airborne radioactive particles. The Air Particle Monitors, called radiacmeters, provide visual and audio signals when radioactivity reaches abnormal levels within the vessel.

The following up-to-date addresses of classmates were recently received: **Dr. Sidney E. Blandford, Jr.**, 2432 East 7th Avenue, Denver 6, Colo.; **William C. Senior**, 43 Churchill Street, Newtonville, Mass.; and **Robert C. Wallace**, 2707 Tonawanda Drive, Rocky River, Ohio.—**J. S. Harris**, Secretary, Shell Oil Company, 50 West 50th Street, New York 20, N. Y.

'28

Two of our classmates, both employed by Bell Telephone Laboratories, have published separate papers in the Bell Laboratories Record and within two months of each other. **Harold Curtis**, VI-A, is the author of a very interesting paper on "TH Radio Relay System" in the February, 1961, Record. He received his S.M. degree the year after graduation and joined American Telephone and Telegraph that same year. His first job was in the Development and Research Department on coaxial cable transmission studies. In 1934, he transferred to Bell Laboratories. He has been engaged in engineering studies of the TE, TD-2, TH and TJ microwave radio systems and is the author of various papers and has patents relating to this work. . . . **Walter Oser** was co-author of an informative paper on Land Extensions for Transoceanic Cables in the Bell Laboratory Record for April, 1961. Walter received his S.M. degree at the Institute in 1928 following his studies in Course VI. He worked for a year with the New Orleans Public Service on power distribution problems, then joined Bell Telephone Laboratories. His first assignments were on line insulators and insulated wires and cables. In 1951, he was responsible for studies of cables for military purposes. More recently, he has been engaged in design and development of armored ocean telephone cables. . . . **Richard Hoak**, X, is also in the news as an author. His paper on "Industrial Water and Re-Use" appeared in TAPPI for February, 1961. This is an excellent summary of the water resources problem of the country with particular attention to the pulp and paper industry. Dick received his S.M. degree at the Institute in 1929 and his Ph.D. at University of Pittsburgh

in 1948. He has been with Mellon Institute since 1940 and has the position of senior fellow. Dick is probably the class' most prolific author of technical papers. These are principally on subjects relating to water resources, stream pollution control and the processing and disposal of sewage and industrial wastes. In addition, he frequently serves as moderator at various technical society meetings.

Last month we mentioned the long letter that **Ralph Jope** had received at Christmas from **George A. Flynn**. George is still with California Texas Oil Company and travels frequently on business. His wife, Larry, sometimes provides him company on such trips. The Flynn's have two sons and two daughters. The older son, Terry, who is at Cornell studying for his B.S. degree in Mechanical Engineering, was married in September to Kit Lipscomb, also a student at Cornell. The younger son, Denis, is a senior in high school and hopes to attend Cornell. Denis is a ski enthusiast and is equally skillful on snow or water. George's older daughter, Sharon, was married to Richard Bump in 1958 after completing her studies at the University of the Philippines on an International Rotary Fellowship. They enjoyed a two-month honeymoon trip including visits to Bangkok, Manila, Hong Kong, Japan, and Honolulu. Daughter Peggy graduated from the Cornell College of Home Economics in 1959 and now teaches the subject at San Rafael High School in San Francisco. The Flynn's have a camp at Lake Pleasant and spend their summers improving the camp and enjoying all sorts of water sports. Recently, George has become interested in Hi-Fi and Stereo and is wiring his whole home for sound. . . . We wish you all a pleasant summer and the best of health.—**Walter J. Smith**, Assistant Secretary, 15 Acorn Park, Cambridge, Mass.; **George I. Chatfield**, Secretary, 11 Winfield Avenue, Harrison, N.Y.

'29

In several of the local papers, we learn that **Joe Murphy** and **Gene Mackey**, Class of '39, of the St. Louis firm of Murphy and Mackey, have been selected to receive the 1961 R. S. Reynolds Memorial Award, the largest annual international award for architectural excellence. In the five years of the R. S. Reynolds Memorial Award, this is the first conferred on an American team of architects. Previous awards have gone to architects in Spain, Belgium, Australia, and Switzerland for buildings in those countries. They were honored for their design of the Climatron, a display greenhouse in the Missouri Botanical Garden, St. Louis. The selection was made by an international jury appointed by the American Institute of Architects, which administers the Reynolds award. The \$25,000 award is conferred annually by the A.I.A. on the architect who has designed "a significant work of architecture in the creation of which aluminum has been an important contributing factor." The award was presented formally on

April 26 during the A.I.A. convention in Philadelphia. The award jury report termed the 175-foot-diameter Climatron, an aluminum and plexiglass structure built on the geodesic dome principle, "sensitively executed and strikingly appropriate to its purpose." The Climatron displays form four areas, each with its own simulated geographic setting. A special system of air conditioning permits the varying "climates" without physical compartmentation of the areas. Banks of high-intensity lights revolve slowly to give the progressive visual effects of sunrise, daylight, sunset, and moonlight. The dome rises 70 feet above ground level. Joe is a fellow of the American Institute of Architects and was dean of the Washington University School of Architecture from 1948 to 1952.

From the Lynn, Mass., Post, we learn that **George Burke**, as I may have mentioned some months ago, is in the architectural, engineering, and contracting business with his sons, George, Jr. and John F. in nearby Salem, where they have recently completed a new business center. George is president of the firm which operates this center, Colonial Realty Trust Corporation, and the boys are directors of the firm. . . . We also read in the Engineering News-Record for April 20, 1961, of the passing of **Edward V. Dockweiler**, 59, retired rear admiral and chief engineer of Los Angeles Harbor. When World War II broke out, he was in charge of Cavite Shipyard. After the fall of the Philippines, he led guerilla bands. Later as a prisoner of war, he secretly directed sabotage of a large Japanese shipyard.

I have had no report on how the class is doing with the Second Century Fund, though I am sure, from the good report on the annual Alumni Fund contribution by the class, that we're doing fine with the \$66,000,000.—**Fisher Hills**, Assistant Secretary, 62 Whittemore Avenue, Cambridge 40, Mass.

'30

During the last month three of our classmates have broken into the news in Springfield, Worcester and Boston papers, respectively. The Springfield Republican reports that **Mart Martinelli** is with the RCA Astro-Electronics Division in Princeton, N.J., and that as senior engineer in charge of tracking stations he helped set up four stations for tracking the Tiros I and II weather satellites. His son John, who is a senior and dean's list student at Rutgers, has worked summers on the Tiros program, specifically on the environmental testing of the satellites under simulated temperature conditions. . . . As of the time these notes are being written, **Ernie Reisner** is scheduled to be the principal speaker at the annual dinner of the Massachusetts Society of Professional Engineers to be held at the Hotel Sheraton-Bancroft in Worcester. Ernie is chief of the Production Assistance Division of the Small Business Administration in Washington. . . . **Ferd Rousseve** is head of the department of Fine Arts in

Boston College's division of arts and science. He is apparently especially interested in church architecture. Several years ago he designed the St. Jude Catholic Hospital in Montgomery, Ala.

Last month's announcement concerning the grandchildren record is already obsolete. The new titleholder in this contest is **Trevor Cramer** who has three sons aged eight to 12, three married daughters and eight grandchildren. Trev is president of American Thermos Products Company in Norwich, Conn. His hobbies are electronics and restoring old houses, specifically "working on the Jedediah Huntington house built 1765." . . . **Tom De Marco** is manager of Technical Service at Monsanto's Plastics Division in Springfield, Mass. He reports as hobbies "some audio consultant work, design and installation of custom Hi-Fi" and playing professionally with a "small Dixieland Combo," instrument not stated. He has two daughters, Ramona, 14, and Teresa, 12, and a son Tom, Jr., 13. He and his family live in Wilbraham, Mass. . . . **Skeets Dolloff**, my first M.I.T. roommate, is an associate professor of geology at San Jose State College. He has two sons, Richard, 14, and David, 11, and is living in Saratoga, Calif. His spare time activities include the presidency of the Santa Clara County T. B. Association and membership on the board of trustees of the local high school. . . . **Fred Dickerman** is a member of that small but select group who studied aeronautical engineering with our class and is still working at it. He is assistant chief engineer of Lockheed's Georgia Division at Marietta, where "we build the C-130 Hercules and the Jetstar corporate transport. We are just under way on the C-141 Cargo Transport for the Air Force." Fred is president of the M.I.T. Club of Atlanta and regional chairman of the Educational Council.

We recently received a copy of the 1961 Alumni Fund Report which reveals that of the 20 classes graduating between 1920 and 1940, our class managed to place 20th in amount contributed and 19th in percentage participation. Doubtless this rather uninspiring performance is due to the fact that our classmates have been saving up in order to make substantial contributions to the Second Century Fund. In any event, in view of the considerable amount of time that **Greg Smith**, **Joe Harrington**, **Jim Biggane** and **Gerry Morse** have been devoting to the Area Solicitation program, it would seem appropriate for us non-workers to give some thought to the matter of making a suitable contribution to the Fund.—**Gordon K. Lister**, Secretary, 530 Fifth Avenue, New York 36, N.Y.; **Ralph W. Peters**, Assistant Secretary, 249 Hollywood Avenue, Rochester, N.Y.; **Louise Hall**, Assistant Secretary, Box 6636, College Station, Durham, N.C.

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Although these notes are being written before our 30th Reunion, by the time you read them the reunion will be over. Lat-

est word from our hardworking Reunion Committee Chairman, **Hal Gurney**, indicates an excellent turnout, with a number of wives and children attending. Among those who will be at the Reunion are Sam Arlen, Bob Backus, Dick Baltzer, Harry Baratta, Myron Burr, Al Coleman, Frank Cook, Mattie Cannon, Ralph Davis, J. R. Gardner, Hal Gurney, Don Grieco, Leo Green, Henry Hartwell, Ed Heffernan, Ed Hubbard, Otto Kohler, Harry Landsman, Jack Lane, Claude Machen, Bob Marcus, Byron Martin, John McNiff, Horst Orbanowski, Charlie Rankin, Howie Richardson and yours truly. Others hoping to attend include Dick Baldwin, Norm Fitzgerald, Louis Gallinari, Hal Genrich, Sidney Miller, Myrle Perkins, E. O. Persion, Tinsley Rucker, Sheldon Smith, B. T. Stott, Leslie Reed, and Chuck Turner. . . . A welcome letter from **Lou Hesselschwerdt**, your former class secretary, says, "Some time ago you asked me to bring you up to date on my activities. Professionally I have been busy here at Tech in the Department of Mechanical Engineering along with my consulting work in refrigeration and air conditioning. Since Professor Townsend's death I have been spending 50 per cent of my time carrying on his work as undergraduate placement advisor for the department. It is very interesting work and I have become acutely aware of decreasing engineering enrollments and the difficulty of finding men to fill the many engineering positions which are available. In addition to my teaching assignments, which involve the students in Architecture and Food Technology, I have been serving on the Committee for Space Heating with Solar Energy. As of now we are completing our third full season on the Mark IV Solar House, a speculative house completely instrumented to obtain operating data. The combination of teaching, placement advising, solar energy research, professional societies, and consulting work all adds up to a busy schedule. It seems to run in the family. My wife, after an active career in church work, is starting her second year as president of the Milton Woman's Club, an organization of some four hundred women. Our family is now down to three, Gertrude, Peter, and myself. Ruth Ann spent a year at the University of Vermont and then transferred to the Massachusetts Memorial Hospital. In addition to a partial nursing career, she acquired a husband and is now living in Canton, Ohio, where her husband is a mechanical engineer for Goodyear. She expects to graduate from the Altman Hospital School of Nursing this summer. Our son Peter has hopes of entering the Institute in about three years. At present, he is more interested in fishing than in books. That is probably the influence of the Maine coast, where we spend as much time as possible." It was good to hear from Lou, and I hope some of you others will follow his example and drop me a note.

A publicity release tells that **Victor J. Duplin, Jr.**, a staff assistant at the Babcock and Wilcox Company's Nuclear Facilities Plant in Lynchburg, Va., has been elected 1961-62 vice-president of the American Ceramic Society. Victor and

Mrs. Duplin live at Glenacre Farm, Va. . . . **James W. Perry**, professor of numerical analysis in the University of Arizona's College of Engineering, has been awarded honorary membership in the American Institute of Chemists. Jim is internationally known as a specialist in the use of electronic computers for library cataloging. . . . **John Elting**, director of processing research for the Textile Division of the Kendall Company in Charlotte, has been named as a member of the Cotton and Cottonseed Research and Marketing Advisory Committee of the U. S. Department of Agriculture by Orville Freeman, Secretary of Agriculture. . . . A note in the World-Telegram for May 19 tells of **Lombard Squires'** appointment as chairman of the 1962 Nuclear Congress and Atomic Exposition which is being sponsored by the Nuclear Policy Committee of the Engineers Joint Council Inc. . . . A few days ago, I returned from a business trip to England, Wales, Holland, Germany, Switzerland, and France. The trip lasted about a month and I had an excellent opportunity to study packaging materials and methods in these countries. . . . New addresses reported are Dr. **Emilio G. Collado**, 501 Old Westbury Road, Roslyn Heights, N.Y.; **William M. Keddie**, 5600 Dalhousie Road, U. B. C., Vancouver 8, B. C., Canada; **Loudon C. Page**, Cannonsville, N. Y.; and Mrs. **Mary M. Handrahan**, care of Henry Grace, Garth Cleft, St. Georges Hill, Weybridge, Surrey, England.—**Edwin S. Worden**, Secretary, 6 Murvon Court, Westport, Conn.; **Gordon A. Speedie**, Assistant Secretary, 90 Falmouth Road, Arlington 74, Mass.

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Our Class really had a banner turnout for the Centennial Dinner at Walker Memorial. It was one of the largest representations of any class of our vintage. The following were present: Bob Semple and wife, Tom Sears and wife, Don Brookfield and wife, Bill Pearce and wife, McClure Lanning, Burleigh Hutchins, Fred Mader and son, Franz Bang, Morris Etstein and wife, Isaac Schwartz and wife, George Falk and wife, Steve Coons, Jim Abbott, Bob Mueller, George Kerisher and wife (George was kind enough to take attendance and furnish me these names.), Charles Martin, Henry Smith, James Mackerman, Phil Benjamin and wife, Frank Gowen, Ben Chadwick, Ben Wilbur, Tim Coffey and wife, Lester Glickman and son, Julius Brody, Tom Amirian and wife, Lester Stanley and wife, Art Lowery, Bob Minot and wife, and Albert Stewart and his wife. Some of us had to attend another part of the dinner entertaining foreign visitors and guests at the Statler. Among these were: Bennett Archambault and his wife, Ed Nealand and wife, John Lawrence, plus your secretary and his wife. All of us had a grand time celebrating the Institute's birthday. This attendance augurs well for the interest which we shall have at our 30th Reunion on the Cape a year from now. Keep up the good spirit!

A letter from **Jim Robson** told about his trip to Florida to observe the performance of some of the tires designed under his supervision. I quote from his letter: "Our tires were on the 11 first cars in a remarkable auto race, one at 149.6 m.p.h. on alleged stock cars." I hope that Jim did not try to drive anything that fast, even though he did have great faith in his own tires. . . . The new Alumni Directory will be out very shortly. I hope that most of you will order copies as so many changes of address have occurred that we have not been able to keep up with them in these Class Notes.

Effective September 1, my home address will be: 1280 Hamilton Avenue, Palo Alto, Calif. I have accepted a position as professor of Civil Engineering at Stanford University where I shall be a member of their Water Resources team. This is my principal interest in life, much more so than administration of a large Department of Civil Engineering. I have enjoyed my 12-year stay at M.I.T. very much and all of my associations in the Department of Civil Engineering have been most enjoyable. However, I am anxious to get back to the country in which I used to live and work before the war and also where I had charge of sanitary engineering for the Army Engineers during the war, namely, the West Coast. The field of water resources is so tremendous out there that I feel I can make a greater contribution working in California at a school which is very active in this field. I hope that if any of you are out in Palo Alto you will look us up. It will not be possible for me to carry on the secretarial duties of the class from California. Therefore, **Bob Semple** has asked **Ed Nealand** to take over as class secretary. This he has agreed to do, with the understanding that I shall continue as assistant secretary. The next edition of our Class Notes will come from Ed in the November issue. I have enjoyed the many contacts with our classmates that the position of secretary has afforded me. Thanks go to so many of you for your co-operation in sending me material of interest to so many of us. Please continue supporting Ed as it is only your contributions that can make these notes interesting and worthwhile. See you at the Thirteenth Reunion!—**Rolf Eliassen**, Secretary, Room 1-163, M.I.T., Cambridge 39, Mass.

'33

Every once in a while a classmate comes out from under the rock and demonstrates without saying so that he has been making good use of his time and energies for his fellow men. **William H. Keith** is such a guy. Bill is executive vice-president of the National State Bank in Newark, but hear this: Bill is a trustee of the Welfare Federation of Newark, vice-president of the Council of Social Agencies there, a member of the board of directors of the Newark Association of Commerce and Industry. He is vice-president of the New Jersey Bankers Association and a member of the board of governors of the New York chapter of

Robert Morris Associates. To top this off, Bill is vice-president of the Robert Trent Council of Boy Scouts, chairman of the Golden Jubilee Committee, and New Jersey state treasurer of the Crusade for Freedom, which operates Radio Free Europe! Bill also serves on the boards of a few industrial enterprises.

A few recent elections and appointments of note, with congratulations from the class: **John Wiley**, as president of the Wings Club, New York; **Charlie Quick** as stations and industrial power engineer at Detroit Edison; **Dick Morse** as assistant secretary of the Army for R&D (a new post in the government and another first for our Dick); **Bill Arnott, Jr.**, as chief engineer for York Research in Stamford; and **Philip A. Coleman** as director of the Bristol (Conn.) Brass Corporation. Phil has been vice-president and director of Accurate Brass since 1954 and will continue in these posts.

We report two deaths with deep regret: **Franklin K. Koerner**, XV, who was killed in an automobile accident in California in February, 1960, and **Edward W. Sann, Jr.**, X, on June 15, 1960. . . . We have a host of address changes, too numerous to report. Won't you please send a note, boys, so we can report to the class what you are now doing. . . . Belatedly we report that **Rodney Chipp** spent the early part of January at the Office of Naval Research in London. . . . **Gilbert W. King**, Director of Research for IBM, heads a team of experts studying the possibilities of automating research library activities. . . . And **Ed Gilliland** is a member of the award committee which will select the winner of the 1961 Kirkpatrick Award for Chemical Engineering Achievement. . . . And a most pleasant summer to all of you. We acknowledge gratefully **Cal Mohr's** continuing help in the preparation of Class Notes; not a month goes by without word from Cal of some newsworthy event concerning a classmate. What's more, Cal seems to cover everywhere east and south of Chicago. Cheers.—**R. M. Kimball**, Secretary, M.I.T., Room 3-234, Cambridge 39, Mass.

'34

Wally Wise sent a good news-catching-up letter. He is now president of the Henry G. Thompson and Son Company. "The Thompson Company is a leading producer of metal cutting saw and blades. Through a subsidiary, the Marshall Steel Company of Chicago, we manufacture ground flat stock and drill rod. Alice, my good wife, has recently resigned from an interesting assignment as secretary to the Director of Admissions of the Yale Graduate School. Peggy, 19, is an Art major at Chestnut Hill College in Philadelphia. Mary Jane, 15, is among the current crop of high school students who are struggling valiantly to achieve grades sufficiently high to enter college in three years. By then the competition will be extremely tough. Billy, whom you met at the Centennial, is 13, in seventh grade, and swims a creditable 100-yard breast-

stroke. He enjoyed the weekend and was somewhat surprised that colleges other than Yale exist. Football and swimming at Yale have made a big impression on him."

A report on the worldwide activities of the Anaconda Company carries a good picture of **Robert C. Becker**, Resident Manager for the Chile Exploration Company. . . . A request in the November issue of *The Review* for information on the whereabouts of **Bertram Hullmuth** produced a teasing few crumbs. I understand that he travels extensively as a technical representative of the Gelosudan Corporation ("a holding corporation with diversified and sometimes odd interests"). He wishes to be remembered to the few people whom he knew during his brief stay at the Institute. . . . **Felix Conti** is now the vice-president and general manager (principal executive officer) of Trendenick-Billings Construction Company, with headquarters in Boston. . . . **John Hrones** was the Case Institute of Technology representative in the procession at the M.I.T. Centennial Convocation. . . . **Thomas H. Murphy** is president of his own consulting organization with offices in Boston. He is very active in the big Institute fund raising drive.

The following was received from **Ed Geitmann**, and I hope that you will all find it as interesting as I did: "Ed Geitmann lives on Beach Road, Oconomowoc Lake, Wisconsin. His object in selecting this place for year round was that it enabled him to dispose of a summer cottage 300 miles away, and at the same time still provide sailing, swimming, fishing, tennis, and Lake Club for the kids. Twenty-one-year old Meg, Ed's oldest daughter was married during the Christmas holidays. (It was then that Ed heard the story about 'The man who didn't mind being a grandfather, but didn't know what to think about being married to a grandmother.') The next two in line are John and Peter, both in high school and brown-bagging like the dickens to try to qualify for admission to M.I.T. The last is Ann, age 11 years, who is still in grade school. She is affectionately known as 'Tiz, the best little girl there is.' When recently being introduced as speaker at a Rotary Club meeting, Ed was billed as president of the Carbonite Metal Company, whereupon the Program Chairman added, 'He also sweeps up.' This will no doubt give you a clue as to how large our company is, but we do make non-ferrous alloys, mainly for paper mills, cement mills, mines, quarries, shipyards, etc., where these metals are used for making bearings in heavy machinery. The nuclear subs, for instance, use our Nickelite. Ed finally became too old to be of any interest to personnel directors so he hocked everything and bought out the other two stockholders. Being a Course XV man, Ed observes that there is one peculiarity about this business, which caters largely to the maintenance and repair departments. It becomes dull while others are still riding high, but it perks up and becomes good before general business bounces back. Just as of February, it has become good! Well that's about it. Just one more thing: I'd

like to urge those fellows who were not written up in the Class of '34 Directory to come out of hiding and tell us about themselves. Whenever anyone's in Burlington or Oconomowoc, Wisconsin, please be sure to look us up!"

Since this secretary gets to M.I.T. for only an hour or two about once a month, I have asked that my address be changed. Material sent to me at M.I.T. will still reach me but not as fast as if mailed to the address below.—**Malcolm S. Stevens**, Secretary, Westfall-Chafee Laminates, P. O. Box 93, West Barrington, R. I.; Other Secretaries: **G. K. Crosby**, Longwood Road, Huntington, W. Va.; **J. P. Eder**, 1 Lockwood Road, Riverside, Conn.; **Harold E. Thayer**, 415 West Jackson Road, Webster Groves 19, Mo.

'35

At the April meeting of the M.I.T. Club of Milwaukee Ex-President **Jack Colby** was presented with an attractive framed picture of M.I.T. by **Jack Ballard** on behalf of our class. The inscription on a silver plate mounted on the picture was: "Presented to Jack Colby by the M.I.T. Class of '35 in Grateful Appreciation of 15 Years of Devoted Leadership as our President, January 1, 1961." Jack Colby sends his thanks to you via these notes. Here's part of his letter to **Leo Beckwith**: "I have never been so surprised or delighted as when Jack Ballard presented me with the class gift. The magnificent picture of M.I.T. is proudly hanging on my office wall. There is no real way in which I can express my appreciation except to say, 'thanks,' to you and all the members of our class. I would appreciate it if you could put the above 'thank you' into The Technology Review together with a description of the gift. This would be the easiest way for me to thank everyone." We are most happy that you like the gift, Jack, and our best wishes go to you. . . . Earlier, District Secretary **Jack Ballard** had written: "Jack Colby and I, with one wife and three children apiece, spent a week of Christmas vacation skiing at Brighton and Alta, Utah. Enough snow, lots of sunshine, beautiful scenery. This working for a living sure does interfere with skiing; a week wasn't enough. This month, I'm having fun running for a public office for the first time. Was appointed to our suburban school board (Village of Shorewood) to fill a vacancy, and have two opponents for election to the remainder of the expired term. Win or lose, it has been a very happy experience to see how many friends are interested and eager to help."

Rocky Mountain District Secretary **Sid Grazi**'s interesting letter follows: "We organized the above company (Titan Construction Company) just about a year ago, in order to engage in industrial and commercial construction which is quite different from our Midwest Construction Company operations. I have therefore been up to my ears getting the new operation under way, and the time and effort are beginning to show some

signs of paying off. Of course, I have many other activities, mainly in community work, and I also try to get in some golf, and some time with the family. My oldest son, who is not quite 15, is hoping to go to Tech for his undergraduate work. We also have a girl who is 11. They were both at the reunion with us last June. We also have a four-year-old son who, naturally, rules the roost. Denver has many Tech Alumni, and although we do run into each other occasionally, I just am not in a position to take on any additional responsibilities, such as gathering class news. Frankly, I've hardly had the time to read the Class Notes, although I do look forward to the news about our classmates. Perhaps next year we may be a little farther along in Titan so that I'll be able to devote some time to writing. **Irv Banquer** will verify what I've told you in that we rarely write to each other, but will periodically get on the phone and bring ourselves up to date." Many thanks, Sid, for taking time out to write.

Our Southeastern District Secretary **Ed Loewenstein** sends information bringing us up-to-date on **Charles W. Mills, Jr.**, who, with his wife, is living at 754 Mt. Vernon Highway, N.E., Atlanta 19, Ga. He has three grown children, two of whom are married, and four grandchildren. His principal occupation is as a sales engineer for Dane & Company, manufacturers' agents in the aircraft and missile field. He is also president of Panel Products, Inc., custom laminate and architectural, building and decorative panels. Aviation is his hobby: he owns two airplanes, is a flight instructor, and belongs to the Civil Air Patrol. . . . Central and Western Massachusetts District Secretary **Jim Eng** adds a little more to **Bissell Alderman**'s activities described last month. Bissell's architectural firm is doing quite a few other schools: listing only those beginning with "W"—Ware, Williamstown and Westfield (plus Weston). Bissell's hobbies right now are "M.I.T.'s Second Century Fund and my two grandchildren." Jim adds that Bissell did an excellent job on the planning and building of the new Athol-Royalston Regional High School two or three years ago and is currently doing some work in the Athol Elementary School System.

I had a chance to catch up with **Frank Wilkens**, a neighbor of mine in Lexington, at the meeting of the new and popular Route 128 Alumni Club luncheon meeting. Frank is manager of Equipment Integration of the Saint Project at RCA, Burlington. They have developed considerably more than a full head of steam since Gagarin made his flight and it made it necessary for Frank to pass on his duties on the S.C.F. to somebody else. Anyway, back in 1940, Frank married Mercia Scott of Arcadia, Fla. Over the years they have always lived in the Greater Boston area while Frank worked successively as engineering supervisor at Barbour Stockwell, assistant director Automatic Flight Control M.I.T. Instrumentation Lab, and engineering supervisor Gas Turbine Control Design, General Electric Company, before joining RCA in 1956. The Wilkens' have two

sons: Scott, 18, a pre-med freshman at Bates, and John, 16, a junior at Lexington High School; and a daughter, Nancy, 12, attending junior high, Frank's hobbies, besides his home workshop, include skiing and swimming. His address is 10 Berwick Road, Lexington.

District Secretary **Mort Jenkins** sent along the following from **Bill Bates** for which I thank them both: "I made contact with **Thomas C. Keeling**, **George R. Kessler**, and **Willard R. Crout** and Brigadier General **Joseph M. Colby** as agreed and urged they get the material to you for the Class Notes. As for the Bates family, I might give you this much: As you know, I am director of Administrative Methods and Procedures in the Commercial Department at United States Steel. I have been with the 'Corporation' for about 19 years, spending the time in both production planning and sales, and I like the company very much. We now live in Mt. Lebanon, a suburb connected on the southern edge of Pittsburgh, where we have been active in various civic and social groups. We have three children, the oldest a girl, Jordan, who graduated from Bucknell University in 1960 and is now doing research in the Biochemistry Department of the Medical School at the University of Rochester. Next we have a girl, known to her friends as Bitsy, who is a sophomore in high school in Mt. Lebanon and is interested in dances, sports and particularly in her participation as a member of the high school rifle team. Joe, in the ninth grade, has grown big enough to do much of the heavy work around the house, with proper incentive. He is interested in sports and occasionally in school work. I married a home town girl (Wheeling, W. Va.) who went to Wellesley when I was at Tech, and we have been interested in P.T.A., Civic League, church work, scouts and the usual problems of trying to raise a family in the electronic age. I have enjoyed reading the Class Notes and am interested to find out how diversified have been the activities of the Class of 1935. I don't seem to see as many of them around the Pittsburgh area as I would like although I have been quite active with the Alumni Association."

District Secretary **Gerry Golden** passed along a very interesting letter from **Larry Stone** whose current address is 1023 Puolu Drive, Honolulu 18, Hawaii. Excerpts from his eight-pager follow: "You may remember that early in November, 1946, I took a job with American Bosch Company in Springfield as assistant production superintendent. My terminal leave from the Army ended 30 December, '46, and lo and behold, on January 21 a telegram from Washington announced my selection for a commission in the Regular Army. Well, it was a difficult decision to make, but I decided on the Army career. We had five delightful months in 1947 at Elsinore, Calif., while I was stationed at March Air Force Base at Riverside. Then I was sent to the Advanced Ordnance Officers Course at Aberdeen Proving Ground, Md. I had the satisfaction of upholding the U. S. Army's supremacy by nosing out a British

and a Canadian officer to graduate at the head of the class. Then in the summer of 1948 we set sail for Germany. Our three and one-half years there were marked by extensive travel and we had wonderful experiences we'll always remember. My work was in Esslingen near Stuttgart in southwestern Germany. I was assigned to an Ordnance Rebuild Group which had several rebuild shops in various parts of Germany to tear apart and overhaul completely all types of vehicles. I got a well-rounded education in various jobs in production, supply, procurement, installation command, and finally as executive officer to the group commander. At our peak we had about 15,000 employees. Returning to the U. S. in February, 1952, I was assigned to Detroit Arsenal as an interim job pending the beginning of the 10-month course at the Command and General Staff College at Fort Leavenworth, Kansas, in August 1952. The Arsenal was producing M47 tanks, and I had the job of trouble shooting for the C.O. on all kinds of problems connected with production, quality control, and planning. Our stay in Leavenworth was wonderful. We enjoyed the post and the civilian community was most friendly. The course was quite a grind, and I was worried at the start because of my lack of troop and combat experience, but this lack had the advantage of leaving me without preconceived answers and I ended up in the top third of the class. For my older daughter Marjorie, Leavenworth was memorable because she met a local boy who eventually (last June) became her husband. In June of 1953, we went from Leavenworth to Washington, D.C., where I was assigned to the Office of the Deputy Chief of Staff for Logistics. It was fortunate we were in Washington for the particular four years fate brought us there. At Walter Reed Army Hospital Lil underwent two operations and my younger daughter Nancy underwent two operations. You can imagine how grateful we were to be there and to obtain the superlative medical care. For the record, the Chief of Surgery found and corrected to the maximum extent possible the condition that had bothered Lil so long, and the same man took care of Nancy in such a way that she has a new lease on life. (He's one of the surgeons who operated on President Eisenhower, and—how deplorably ironic—he died of cancer last January at about 50 years of age.) Unless an exception to the law is obtained four years is as long as an officer can be assigned to the Pentagon, so despite the fact I had developed no ulcers, they had to send me somewhere. If you think the Army has no heart, listen to this! The doctors decided that in view of the physical condition of both Lil and Nancy, I should not be separated from them. Since I was due for overseas assignment they came up with Hawaii which has fine medical facilities and beneficial climate as well. We so enjoy the sun and the water and the beautiful scenery and the balmy climate and the lovely flowers. I've been writing this sitting on the beach at Waikiki, where you'll usually find us every weekend all year round.

(We were swimming on Christmas and New Years Day too!) We live about six miles from Honolulu, about 10 miles from Waikiki, and about 17 miles from Schofield Barracks (where I now work as chief, General Supply Branch, Ordnance Division, U. S. Army, Hawaii). For the first six months here I had a swell job running the Ordnance Division of the Base Command (formerly the Hawaiian Ordnance Depot), but there was a re-organization that wiped it out. While interesting, my new job has less responsibility which in Hawaii is not altogether undesirable!"

And now some quickies: **Kenneth Finlayson** has been elected vice-president, sales, Scientific Design Company, Inc., 2 Park Avenue, N. Y. C. They are designers and builders of chemical plants. . . . **Walter (Stocky) Stockmayer** is serving as a vice-chairman at the Gordon Research Conferences at the New Hampton School in New Hampshire, June 19-23. His present address is in care of the Department of Chemistry, Dartmouth College, Hanover, N. H., and he has promised a newsy letter which I hope we shall have for our next notes published in November. . . . **Otto Zwanzig** is now located at 2121 Virginia Avenue, N. W., Washington, D. C., and a long way from Vancouver, B. C. How about filling us in, Otto?. . . . **William W. Smith** has been named manager of Engineering and Development at the Electric Storage Battery Company's West Orange, N. J., plant, where he has been located since graduation. . . . **Roger Needham** is now with the Voice of America as a civil engineer after 15 years in the contracting business. He is scheduled for an African construction assignment shortly. . . . **Ed Taubman** reacted to District Secretary **Jack Orchard's** "needle" with this note: "The reunion was really the high spot of the year for me as well as for my youngsters. They still talk about it. As for pictures, all mine were movies, which I expect to bring to the 30th, so I can't help much with the album. I have been chosen (drafted is a better word) for soliciting for Second Century Fund, and that will take up some evenings."

Many thanks to the 19 regional and district secretaries (out of 34) plus the dozens of "Indians" who have contributed by their letters to making these notes so complete and interesting this past year. Now there will be a three-month gap giving ample time for the rest of you to write. Please do, this summer without fail, and have a good one. . . . **Edward C. Edgar**, Kerry Lane, Chappaqua, N.Y.; **Hal L. Bemis**, 510 Avonwood Road, Haverford, Pa.; **Elmer D. Szantay**, 6130 North Kilbourn Avenue, Chicago 16, Ill.; and **Gerald C. Rich**, 673 Rosita Avenue, Los Altos, Calif.; Regional Secretaries.—**Allan Q. Mowatt**, Secretary, 11 Castle Road, Lexington 73, Mass.

'37

George Rosen of United Aircraft's Hamilton Standard Division has been awarded the corporation's George Mead Medal for

engineering achievement. George, who is the head of aerodynamics and hydrodynamics at Hamilton Standard, received the award for his invention of the variable camber propeller. He joined Hamilton Standard after graduation and in 1943 was made assistant chief aerodynamicist, and five years later, was appointed chief aerodynamicist. He became chief of analysis in 1955 and was promoted to his present post last year. George and his family live at 21 Mohawk Drive, West Hartford, Conn. . . . **Jim Ewell**, Vice-president of Procter & Gamble Company, Cincinnati, Ohio, has been elected to their board of directors. . . . **Al Busch** has been elected president of Keuffel & Esser Company of Hoboken, N. J. Al joined K & E in 1938 and in 1945 was elected to the board of directors and named assistant treasurer. In 1948, he was appointed financial vice-president and in 1955, vice-president and treasurer. Al is a director of the New Jersey Manufacturing Insurance Companies, trustee of the New Jersey Manufacturing Association, director of the Summit Trust Company, and a member of the advisory board of the Mutual Boiler & Machinery Company.

Matt Rockwell, AIA, AIP, is the new director of the Division of Public Affairs of the Architectural Institute's national headquarters. Upon graduation, Matt began his career as assistant planner of the Chicago Regional Planning Association. During World War II, he served as officer-in-charge of the Advance Planning Section of the War Department. In 1945 he became a partner in the architectural and planning firm of Stanton and Rockwell in Chicago. Matt is currently chairman of the Winnetka Zoning Commission and Zoning Board of Appeal, a member of the board of directors of the Alledale School for Boys since 1953, and a former lecturer in city planning of the Illinois Institute of Technology. . . . **Ray McFee** has been promoted to director of Research, Azusa Plant, Aerojet General Corporation. . . . **Paul Vogel** is now vice-president of administration of Fraser Companies, Ltd., Edmundston, New Brunswick, Canada. . . . **Bill Penn** is insulation engineer for the Direct Current Motor and Generator Department of General Electric Company and has published several papers and articles. . . . **Harry Stern** is vice-president and general manager of Bachmann-Uxbridge Division of Indian Head Mills, Inc., New York City, and is also a director of the National Association of Woolen Manufacturers. . . . Mrs. **Nancy Klock** is now teaching mathematics at the University of Hartford and has done much traveling in the past seven years.

This is the last issue of The Review for this season. We hope you have a pleasant summer and remember to send cards and letters to your class secretaries. Next year at this time we will have fond memories of our 25th Reunion of June, 1962.—**Robert H. Thorson**, Secretary, 506 Riverside Avenue, Medford, Mass.; Professor **S. Curtis Powell**, Assistant Secretary, Room 5-323, M.I.T., Cambridge, Mass.; **Jerome Salny**, Assistant Secretary, Egbert Hill, Morristown, N. J.

We have a couple of news items to report. The first is a new appointment for **Paul Des Jardins** by the Worthington Corporation. Paul, as many of you know, has been with Worthington since graduation except for two periods when he had assignments with the U.S. Navy. Formerly manager, Product and Marketing Planning Department, he has now been appointed manager, Engineering Planning. . . . The second deals with an invention of **Matt Boissevain**. He has developed an educational aid for expediting classroom drills. The machine, called Autoscore, is a device to guide a student through a set of multiple choice questions. It records the number of errors made and the time required, and it forces the student to select a correct answer to one question before the succeeding question may be attempted.

Fred Kolb sends a letter he received from **Ravi Kirloskar** in Bangalore, India, and I quote it in part: "It is about a year since I met you in Rochester, and I shall remember the wonderful weekend we spent together with your children. It was certainly a good joy for me to see you again after so many years. I am sure you know Ralph Chapin, Class of '37, who stays in Batavia, N.Y. He came to India with his wife last month and spent two weeks with us. He is so close to you that one of these days he is going to come to meet you and tell you all about us. Kirloskar Brothers, Ltd., is going to celebrate the Golden Jubilee on 25 May, and from a very small beginning 50 years ago, our firm has grown quite large. We are now employing more than 6,000 persons with a sale of \$20 million. Well, Fred, we hope there will be another opportunity again sometime during the next few years when we will meet again. It is your turn to come here now!"—**David E. Acker**, Secretary, Arthur D. Little, Inc., 1424 Fourth St., Santa Monica, Calif.

Continuing where we left off last month, here are more items picked up from '39'ers who attended the Centennial in April. . . . **Maurice A. Meyer**, VI, is vice-president of ADCOLE, Cambridge, Mass., which specializes in rocket instrumentation and concentrates on sounding rockets for ionospheric research for the air force. Before joining ADCOLE, Maurice was director of engineering for L.F.E., which spelled out reads: Laboratory for Electronics. Maurice and Ruth live at 19 Sherwood Road, Natick, and have two children: Bonnie, 13, and Alan, 12. . . . **Dick Feynman**, one of the Centennial panel members, whom I did not get to see because of the wide variety of concurrent attractions, is professor of theoretical physics at Cal Tech. He lives in Altadena, Calif., and is taking a sabbatical leave this year. Perhaps some of you saw Dick's recent writeup in *Fortune* magazine, where he was listed as one of

Fortune's 10 great scientists. . . . **Leonard F. Luchner**, II, is a manufacturers' representative handling heating and air-conditioning equipment. His office is in the Statler Building, Boston. He specializes in industrial, commercial, and marine installations. He and Dorothy live at 108 Arnold Road, Newton Center 59, Mass., and have Philip, 15, Bruce, 13, and Beth 8.

Myron (Mike) Norman and Grace, who live at 147 Payson Road, Brookline, have three children: Ruth, 14, Paul, 12, and Alan, 9. Mike has his own firm, the Harvard Wine and Liquor Company, of Brookline. . . . **Irving Cohen**, XV, recently bought a small company, the Lewis Chemical Company, and is jobbing in chemical specialties for general manufacturing use, such as paint, rubber, etc. He also negotiates to buy plant surpluses. Irving and Olive have two youngsters: Amy, 12, and Clifford, 9. They live on Allen Avenue, Waban 68, Mass. . . . **Norman H. Taylor**, VI-C, is vice-president of Itek, **Dick Leghorn's** near-legendary company dealing in information technique. Norm has been with Itek for nearly three years, and was formerly design engineer in charge of the Sage Computer at Lincoln Lab. Jeanne is Norm's fine wife and they have Robert, 17, and Meredith, 10. They live at 30 Meadowbrook Lane, Reading, Mass. . . . **Walter T. White**, VI-Grad, works with Sperry Gyroscope Company Division of Sperry Rand as engineering department head for advanced studies. Walt and Margaret Ann took honors among '39'ers for bringing the prettiest girl to the Centennial Banquet. Marian, 16, came up with them from Long Island. And there were four more youngsters at home: Ellen, 14, Beverly, 9, and 5-year-old twins Thomas and Sylvia. The Whites live at 12 Osborne Road, Garden City, Long Island, N.Y.

Simon Roberts is president of his own firm, Monks Laundry Company, Cambridge. The firm handles household and institutional laundry in Cambridge, Wellesley, Concord, and Natick, Mass., and recently has branched out into Warwick, R.I. With Ruth, the Roberts family consists of Carl, 12, Michael, 11, and Betsy, 6. They live at 132 Bellevue Street, Newton 58, Mass. . . . **Burton D. Rudnick**, XVII, the old Building Construction Course, is engaged in industrial real estate and specializes in eastern Massachusetts properties. Jeanne is Burton's wife. They have Leslee, 11, Debra, 9, and Andrew, 6, plus another en route, expected in the fall. . . . **Edward B. Snyder**, V-Grad., is chief engineer for Bentley Harris Manufacturing Company, Conshohocken, Pa., specializing in electrical insulations in sleeve form for motors, transformers, and electronic applications. Ann Webb Snyder is another Wellesley gal. The Snyders have two boys, Hugh, 17, and Ned, 13, and one girl, Toni, 11. They live at 663 Brooke Road, Wayne, Pa. . . . **George L. Williams**, XV-Grad., is product group manager for Nuclear Products Department of Metals and Controls, Inc., a division of Texas Instruments, Inc. George's firm, located in Attleboro, Mass., makes nuclear fuel for submarines, power plants, and reactors for test, training, and research.

He and Margaret have three children: Margery, 18, Lois, 15, and Julia, 12. They live at 40 Ashton Road, Attleboro, Mass. . . . **Reevan Spiller**, XV, is controller for the Combined Jewish Philanthropies of Greater Boston, located at 72 Franklin Street, Boston. With Gertrude, Reevan lives at 77 Kirkland Street, Cambridge, and has Naomi, 15, Nathaniel, 12, David, 9, and Rachael, 8. Prior to joining the philanthropic organization, Reevan spent eight years at the B.G.S. Shoe Corporation, also as controller.

Ernest O. Ohsol, X-Grad, is vice-president of Haveg Industries, Inc., Plastics Park, Wilmington, Del. Formerly with Pittsburgh Coke and Chemical as Director of R & D, Ernest is now general manager of the chemical group operations of Haveg, including two divisions devoted to Resins and Compounds and "Sil-Temp," a high temperature fabric used for missiles and rockets. Ernest and Rosamond live at 1318 Hillside Boulevard, Wilmington 3, Del. Here's the rundown on their one boy and three daughters: Fred is a Lehigh sophomore, Blakeley is a high school junior, Alison is an eighth grader at Lankenau Girls' School in Philadelphia, and Betsy, four, "runs the family." Incidentally, Ernest and Rosamond are prime examples of how delightfully graduate student affiliates of '39 can blend into class activities. They are now "ernest" rooters for class reunions, and urge other graduate affiliates to "join '39." . . . **Robert W. Pratt**, II-A, is senior project engineer at the Pratt and Whitney Aircraft Division of United Aircraft Corporation, in charge of development of the new JT3D Turbofan engine. That's the improvement on the pure jet engine that's just coming into commercial service in the Boeing 707 "Astro-jet" as well as on the Douglas DC-8-50. Bob and his group of 10 project and assistant project engineers and 20 experimental test engineers have come up with this new engine that gives a 20 percent increase in range and fuel economy over the old "pure jet" engine. With his wife Parmys, Bob lives at 122 Waranoke Road, Manchester, Conn. Son Alan is a pre-med at Ohio Wesleyan, and daughter Andrea is a high school junior. Bob occasionally sees **Bob Withington**, a Boeing chief engineer at Seattle.

George Beesley, X, is vice-president of Servend, Inc., a food service management firm doing business in 10 states of the northeastern United States and serving hospitals, YMCA's, and industrial plants as well as conducting their own retail stores such as coffee shops and bakeries. "We have put business methods into the food industry," proudly claims George. And in the home management line, George and Eleanor have two boys and a girl. Dick, 15, is a tenth-grader; Peter, 13, is in the seventh; and Martha, 7, is a bustling first-grade gal. And their address: 10 Keniston Road, Lynnfield, Mass. . . . **W. B. Parker**, X, whose initials stand for Walter Brown but who has never been known to respond to anything but "Brownie," is director of research for the Container and Chemical Division of Dewey and Almy Chemical Company, in Cambridge, Mass., a division of W. R.

Grace and Company. Just for one indication of how Brownie's ranging chemical interests have carried him, the continuing research into surface chemistry has helped produce Dewey and Almy meteorological balloons that reach altitudes of 140,000 feet. Family-wise, Brownie and Lucy have reached a high elevation, too. Lucinda, 18, is at Reed College, Portland, Oregon. Evelyn, 16, is a high school junior, and is followed by Theodora, 13, Sophia, 8, and Benjamin, 3. . . . **Ralph L. Hegner**, X, is technical superintendent of the Pompton Lakes, N. J., works of DuPont. His plant specializes in electric blasting caps and other explosive specialties. With Kathryn (Kay), the Hegners have David, 10, Robert, 8, Janet, 6, and Richard, 3. The two oldest boys are avid little leaguers.

Maxwell C. Coutts, XV, is manufacturing vice-president of Sangamo Company, Limited, manufacturers of electric power measurement equipment. Max is president of the M.I.T. Club of Southern Ontario, and has been for 15 years, and is also honorary secretary for the Ontario region. Adele is the loyal Tech wife here, who doubtless sweats out many an evening while Max is busy interviewing the 15 or 20 boys each year who aspire to M.I.T. The Coutts have one boy, Gregory, 7. They live at 186 Glencairn Avenue, Toronto 12, Canada. . . . Realizing, as soon as I met Max at the dinner that he and **Mike Herasimchuk** had much in common, I had the pleasure of getting them together for a chat. As you'll remember from last month's partial coverage of the Centennial '39'ers, Mike is honorary secretary for part of the Pennsylvania area. . . . See you in the fall, and send along some notes for publication during this otherwise lean period of note-gathering.—**Oswald Stewart**, Secretary, 31 Birch Road, Darien, Conn.

'40

Milt and Gitty Green are the proud parents of a boy, Jonathan, arrival date, February 17, 1961. After three girls, the Greens undoubtedly by now have learned how to fold the diapers in the reversed direction. . . . As of March 31, 1961, our class had contributed \$7,044 to the Alumni Fund. Thirty per cent of the members on the active class roll had contributed as against 31 per cent last year. The average contribution was slightly less than in 1960. However, considering the fact that 1960 was a reunion year and 1961 was not, the class did exceptionally well. Let's try to do even better for the next fund, and remember that our goal is \$60 per year per classmate toward our 25th year gift.

From **Arnie Wight** comes news of '40's participation in Tech's Centennial Celebration: "This note is to report a most successful 'Class of '40' Centennial celebration was held last Saturday evening with a Dutch treat cocktail party at **Russ Haden's** home in Lincoln followed by dinner at Hartwell Farms. We are all most grateful to the Hadens for their hospitality in offering their home for this get-

together and especially grateful to **Connie Haden** who made all the delicious hors d'oeuvres herself. After dinner about half the guests returned to Haden's to complete a delightful social evening. An interesting sidelight of the occasion was Russ' need to emplane for London on a business trip at 8:30 P.M. so both he and Connie missed the dinner, but Connie was back at home to hostess after our meal. The following couples were present: **Jim Baird**, **Bob Bittenbender**, **Bob Church**, **Doug Eckhardt**, **Frank Libman**, **Sam Rabinowitz**, **Bill Stern**, **Paul Witherell**, **Don Erb**, **Hap Farwell**, **Bernie Feldman**, **Jim Gilman**, **Dave Lowry**, **Dick Robertson**, **John Szumski**, **Jay Zeamer**, **John Halford**, **Rus Haden**, **Stan Hurley**, **Ted Kingsbury**, **Grover Paulsen**, **Wally Schuchard**, and **Arnie Wight**. Also present as evening bachelors were **Kap Kapinos** and **Dick MacPhaul**."

This winds up another Alumni year. Don't forget to write during the summer vacation so that we can have a good column in the fall.—**Alvin Gutttag**, Secretary, **Cushman, Darby & Cushman**, American Security Building, Washington 5, D.C.; **Dr. Samuel A. Goldblith**, Assistant Secretary, Department of Food Technology, M.I.T., Cambridge, Mass.

'41

By the time these notes appear, the 20th Reunion will be only a memory; however, because of the lead time involved, no report can be made for this issue. Complete details will appear in the November issue of The Review. This will be the last issue until that time. . . .

Harold Ricards has been named assistant manager of economic and marketing research for the Esso Division of Humble Oil and Refining Company. He had previously been head of distribution and exploratory research, and prior to that (1941 to 1958) had held various posts at the Linden, N.J., Research Center of Esso.

Jean Fassett Rosse has been elected to her third term as a trustee on the Mill Valley Elementary School District Board in California. She also works part time in the office of her husband, J. Martin Rosse, IV, '40. . . . **James Austin**, Secretary of the American Meteorological Society, represented the society in the Convocation procession of the Centennial Celebration.

Joseph Bergantz has recently been appointed dean of Chemical Engineering at the University of Buffalo. . . . **William Rotzler** has been appointed general superintendent of technical services for Monsanto Chemical Company's Chocolate Bayou project at Alvin, Texas.

A very pleasant summer to all of you. How about a line or two about your recent comings and goings? We could use some lively personal letters to supplement the gleanings of the clipping services. See you in the fall.—**Ivor W. Collins**, Secretary, 9 Sunnyside Drive, Dalton, Mass.; **Henry Avery**, Assistant Secretary, Pittsburgh Chemical Company, Grant Building, Pittsburgh 19, Pa.

'42

This month's mail brought an intriguing letter from **Charles E. Ruckstuhl, Jr.**, Corporate Representative for the Boston area for the Bendix Corporation. Charlie says some nice things about these notes (deeply appreciated by your secretary) and then goes on, "I left Pacific Division as the eastern representative working at Rockefeller Plaza in New York to become the corporate representative for the Air Force and allied groups up here in the Boston area. I still haven't sold my home in Wilton, Conn., but I expect it to go shortly, and I have already started to build in Groton, Mass., where I have purchased about four acres on a hilltop that commands a view extending from New Hampshire to Connecticut. It is up here that I intend to carry on some 144-megacycle research work in the two-meter ham band with the aid of Dr. Ehrensbeck of Air Force Cambridge Research Labs. and Mr. Leon Ames of the same laboratories. I expect to attempt to build some very high gain antennas and try some tropospheric scatter, knife-edge diffraction transmissions, and possibly meteor scatter work with other active and inquisitive radio amateurs from the Bendix Corporation's various divisions extending from Ann Arbor, Mich., down to Baltimore, Md. The antenna system is very new and represents about the latest thinking in the area of backfire arrays. Hopefully, I'll have my new home finished by this fall, and perhaps we can get up there and see what this technical monstrosity looks like and, when we are tired of that, we can take a jump in the pool."

IBM has announced two promotions: **Ralph G. Mork** is now manager of the Engineering Laboratory at the Federal Systems Division's Command Control Center, Kingston, N.Y. The Command Control Center develops and manufactures advanced ground-based digital computing systems for space and defense agencies of the Federal Government.

. . . **H. Thomas Ware, Jr.**, of Greenwich, Conn., has been appointed manager of planning for the Advanced Systems Development Division of IBM. This division identifies technical and commercial feasibility of advanced information handling computer systems. . . . **M.P. Reed** has been promoted to manager of publications for the United States Gypsum Company. . . . **John L. Altekruze**

is head of the new aerospace department of the Goodyear Aircraft Corporation's engineering division. John has been with GAC for more than 10 years and for the last two years has been responsible for operations planning and direction of astronautics programs within GAC's Weapon Systems department. He has directed projects concerned with automatic controls and electromechanical components for aircraft, missiles and radar systems. He is chairman of the ASME Aviation Division's Guidance and Instrumentation committee and is a member of the American Rocket Society and the AIEE. . . . We hope that coffee at the reunion will

be supervised by **Warren H. Powers**, manager of production for Maxwell House.

As alluded to last month the **Rosenblum** clan and associated files are moving southwest. Sometime in June we hope to be settled in Montclair, N.J. For the summer I plan to commute by Hudson River Ferry to the New York financial district. When not travelling around the country visiting new scientifically oriented companies, my headquarters will be the offices of Technological Investors Corporation and Technological Investors Management Corporation at 27 William Street, Telephone HA 5-4841. We are interested in financing concerns with proven technical leadership whose managements desire to grow and maintain independent operations with the assistance of a technically knowledgeable financial partner. Investments will range upwards from \$100,000 and will normally be on the order of \$500,000. I welcome letters from those interested in more information and look forward to hearing from and seeing friends in the New York area and all whose paths lead them at one time or another to it. . . . A recent newspaper article tells of the 32 schools and many other large buildings built by the C. A. Batson Company of Brockton, Mass., under the presidency of **Robert A. Batson**. After serving on the aircraft carrier Lexington Robert first worked for Jackson and Moreland before joining the contracting firm that had been started by his father. The Batson Company is also well known for the large shopping center and the numerous supermarkets it has built. Robert and Helen have four children and live in Duxbury.

We sadly report the death several years ago of **Laurence C. Andrews, Jr.**, who graduated with us in Course XVII. No further details are available other than that he had lived in South Windham, Maine. Information about him will be recorded here when it is received. . . . A six-page article, one of a series of two, by Capt. **William C. Fortune**, USN, AFIAS, recently appeared in "Aerospace Engineering." The series is entitled "Aircraft Launching and Recovery Systems—Recent Advances and their Potential Application to Commercial Aircraft." Captain Fortune took his M.S. in aeronautical engineering with us and went on to combat duty in the Pacific during World War II and the Korean War. He was chief engineer at the Naval Aircraft Factory, 1946-48, and has had a wide variety of R & D assignments at the David Taylor Model Basin and other Navy facilities. At the present time he is commanding officer at the Lakehurst Naval Air Station.

A report from the headquarters of the Second Century Fund lists three class members as chairmen of their areas: **Herbert D. Landes, Jr.**, in Utah; **Charles H. Smith, Jr.**, in Cleveland; and **Paul W. Sommer** for Illinois (outside of Chicago). Our best wishes to them for successful campaigning on behalf of the Institute. . . . As of the end of March the regular Alumni Fund organization reported that our class participation is down to 31 per cent, but that our average con-

tribution for 223 participants is up to \$30. Class Agent **Charlie Speas** and his associate, **Bill Hermann**, look forward to seeing financial participation by many more of the 716 men and women on the active class roll. . . . We all send our greetings for a gay and carefree summer, from **Ed Edmunds** in Albuquerque, **Jack Quinn** in Hawthorne, **Bob Keating** in St. Louis and —**Lou Rosenblum**, Secretary T.I.C., 27 William Street, New York 5, N.Y.

'43

Dr. William M. Laird, affectionately known to us as "Bill," has been appointed radio officer for the Allegheny County, Pa., Civil Defense Radio Amateur Civil Emergency Service. In this capacity he will co-ordinate the activities of more than 300 amateur radio operators in case of emergency. Bill served as an officer in the Air Corps in World War II, received his master's degree in Mechanical Engineering at Carnegie Tech and his Ph. D. in mathematics at the University of Pittsburgh. He served as a civilian flight test engineer for the U. S. Navy, did research work for Westinghouse Electric Company, and served six years as a research engineer for Gulf Research and Development Corporation. At present he is associate professor of Mechanical Engineering at the University of Pittsburgh. . . . **Dr. Richard B. Adler**, Professor of Electrical Engineering at M.I.T., has been named to the board of directors of Solid State Materials Corporation of East Natick, Mass. After graduation Dick served in the U. S. Naval Reserve as an instructor at the M.I.T. Radar School until 1946. At that time he became part-time staff member of the research laboratory of electronics at the Institute. He has been associated with M.I.T. since then in both research and teaching capacities. He received his doctor's degree in Electrical Engineering in 1949, and from 1951 to 1953 he was leader of the M.I.T. Lincoln Laboratory Solid State and Transistor Group. Since then, he has continued in the same field at the M.I.T. research laboratory of electronics and, more recently, with the energy conversion group of the M.I.T. Electronic Systems Laboratory. He resides at 25 Holden Wood Road, in Concord, Mass., with his wife and two children.

Robert R. Everett, who received his master's degree with our class, was appointed vice-president, Technical Operations of the MITRE Corporation late in 1959, which we missed in these notes at that time. Bob became associated with the development of electronic digital computers at M.I.T. in 1945 and was named associate director of the M.I.T. Digital Computer Laboratory in 1951. He was associated with Lincoln Laboratory from its beginning and eventually was placed in charge of SAGE system design and test and of Lincoln's data processing research and development. He joined the MITRE Corporation in 1958 as technical director. . . . **Charles J. Lawson, Jr.**, is the president of Hancock Telecontrol Corporation, a new company formed in Decem-

ber, 1960, which corporation acquired the Telecontrol Division of Hancock Industries, Inc., of Jackson, Mich. The company manufactures and sells Telecontrol, which is an automatic input data collection, monitoring and communications system, designed to continuously provide management with constant central control of production. Telecontrol makes available the pertinent facts and communications means for more efficient operation of today's complex manufacturing plants. Telecontrol is now installed in more than 40 companies, including such leaders as General Electric Company, General Motors Corporation, Sunbeam Corporation and Doehler-Jarvis Corporation. Charlie had been director of manufacturing services and an executive staff member for International Business Machines in New York. He had spent the last 14 years in various executive positions with IBM.

Dr. Lloyd A. Nicolai of Short Hills, N. J., has been named to the newly created staff position of product manager at Esso Research and Engineering Company in Linden, N. J. He was appointed product manager for chemical raw materials. Dr. Nicolai, who received his doctor's and master's degrees from M.I.T., joined Esso in their Louisiana unit in 1944 and later became assistant director of the laboratories in 1957, then the following year, joined Esso Research in Linden. . . . **Mrs. Maryalice Conley Moore**, who did graduate work with our class, attended a six-week course at M.I.T. last summer on radioisotope technology. Her comment was, "I found it hot in more ways than one!" . . . **Jack McDonough**, our Assistant Secretary for the Midwest, has moved to 524 North Lincoln Street, Hinsdale, Ill. . . . **Yusuf Meer** has moved from New York City to 3600 Van Horn Avenue, Montreal, Canada.

This is the last issue of these notes before the summer vacation; the next edition will come out in November. The new issue of the Alumni Register will probably be published and distributed in June or July of this year. I would heartily recommend purchasing one so that you may become better acquainted with the classmates in your area as well as have the addresses of other classmates throughout the country in the event you do any traveling. Your secretaries again extend a cordial invitation to call on them if you happen to be in the areas in which we are located. We wish you all a happy summer and please don't forget to write. —**Richard M. Feingold**, Secretary, 10 North Main Street, West Hartford 7, Conn.; Assistant Secretaries: **Christian J. Matthew**, Arthur D. Little, Inc., 314 Battery Street, San Francisco, Calif.; **John McDonough, Jr.**, Meissner Engineers, Inc., 300 West Washington, Chicago, Ill.

2-'44

These are the last Class Notes for this year, and there seems to be a good deal of information to include. Received a publicity release from Union Carbide, indicating that **Tom Carmody**, X, has been

appointed sales manager of Union Carbide Olefins Company. Tom works out of New York City, and when he is in his office he is in the new Union Carbide building in midtown, which is one of the showpieces of architecture in the area. . . . A note from **Ed Coan, VI**, who decided to write as a result of reading the February Class Notes. Ed is site operations manager for the BMEWS site in Thule, Greenland. He says he hasn't seen any '44 men since he went to Greenland, despite the fact that there are 1,000 engineers in the area located some 800 miles from the North Pole. When in the U.S., Ed calls Riverton, N. J., home, and that is where his wife Barbara, and five children are located. He advises that he is responsible for the operation of very powerful long-range radars watching space out over the North Pole for possible ballistic missiles. He ends by saying that this is a typical job for a Course VI man. I believe Ed is rather modest in that statement. He would like to hear from members of the class, and his fraternity brothers. His address is E. M. Coan, RCA BMEWS #384, APO 23, New York, N. Y.

I recently attended a meeting of the Fairfield County M.I.T. Club, and ran into **Dick and Natalie Hatfield, XIII**. He is with Booz, Allen & Hamilton. The family has recently returned from two years in Iran. They loved it; however, just prior to the Iran assignment, they had spent three years in Italy, and they were spoiled there. They presently live in Stamford, and it appears for the moment as though there will not be any foreign trips for a while. Dick has been quite active in keeping up with other members of the class, and I'm indebted to him for the following. Molly and **Jack Taft, XIII**, live in Duxbury, Mass., and he is with Bethlehem Shipbuilding at their Fore River Yards. . . . **George Letz, XIII**, is with Electric Boat. . . . **Kelly and Dottie Damsgaard, XIII**, are living in a suburb of Philadelphia. He is maintenance manager of Sun Shipbuilding, having recently been promoted from assistant naval architect for the yard. Apparently, the Damsgaards and the Hatfields have followed each other across the country several times, since they met and were neighbors on both the East and West Coasts over the last 10 years. . . . **Henry Bowes, VI**, who lives in Old Lyme, Conn., is special projects engineer with Electric Boat Company, which translated means that he is up to his ears in R & D work.

By the time that these notes are published, a meeting, organized by **Bob Peck, XV**, will have been held in Cambridge to explore the possibilities of getting the two classes of '44 together. Everyone whom I talk to seems to think it is a good idea, and if any of you have any ideas on how you would like this accomplished, please drop me a note during the summer. Since these are the last notes before the summer lull, I want to wish you all a very pleasant summer, and if you are in or near New York, why don't you give me a call at my Norwalk number, VI 7-4833, or my Stamford number, DA 5-2251.—**Paul M. Heilman**, Secretary, Reflectone Electronics Inc., West Main Street, Stamford, Conn.

'46

Although this will be published after reunion time it has to be written long before, so unfortunately I cannot report on the gala affair. The returns to date indicate a very large and congenial turnout, much larger than either our 5th or 10th Reunion, so if you missed the fun you have only yourself to blame. We'll be back in November with a full report. . . . Before closing out this short column and this long publishing year we have news from a few hot-off-the-press clippings to report. **Roger Sonnabend**, the man with more business, social and charitable credits than any 10 others put together, was recently elected national president of the Young Presidents' Organization for 1961. . . . **Richard G. Steuer**, Senior Engineer in the All Weather Landing Flight Control System Engineering Department of Sperry Gyroscope has recently been awarded a patent for a flight control system. . . . **Abdul Jabbar Abdullah**, President of the University of Baghdad, represented his university in the recent M.I.T. Centennial Celebration Convocation procession.

Robert B. Davis has been appointed to the faculty of Webster College as mathematics co-ordinator in a new teacher education program to begin next fall. The program is supported by a five-year Ford Foundation grant. Bob is presently on the faculty of Syracuse University. He is the developer of the Madison project in elementary mathematics, a study to determine the best kind of mathematics instruction for children of various ages and abilities. Bob will do demonstration teaching in pilot schools and will also teach a pilot mathematics group in the new teacher education program at Webster. . . . The reports on the 1961 Alumni Fund are in and the Class of 1946 has not done too well. As compared to 1960 the number of contributors has fallen off 10 per cent and the average contribution has slid off a like amount, for a total reduction in giving of about 20 per cent. The 1960 average was \$19.10 and the 1961 average was \$17.30. I hope this doesn't indicate things aren't going well for '46'ers. From the many reports of promotions and great achievements I receive about class members I know this isn't the case. What say we all get behind the Second Century Fund this year? And don't forget the Alumni Fund either, or you won't get to read these inspiring notes next year. You wouldn't want that to happen! Until November, then, and a report on the reunion, I remain your obedient servant.—**John A. Maynard**, Secretary, 15 Cabot Street, Winchester, Mass.

'48

For the last issue of The Review this year, let's start off with some interesting figures about the Alumni Fund. In our

class there are 442 contributors, or 29 per cent participation, and the average contribution is \$18.20 or 10 cents more than the 1960 average contribution. It will be interesting and challenging to see if these figures can be raised next year.

The Defense Department has announced the appointment of **Lawrence Levy** of Newton Center as U.S. defense representative for the North Atlantic and Mediterranean areas. Levy is president of Allied Research and has been closely associated with the Defense Department's research and engineering activities in many fields. . . . **John Hughes** of Belmont has been elected assistant vice-president of the American Mutual Liability Insurance Company. He has been with the company since 1959. . . . **Cornelius Hudak** of Thomaston, Conn., was promoted to general sales manager of Plume & Atwood Manufacturing Company. In his new position, he will be responsible for sales promotion, marketing and the co-ordination and development of new accounts. . . . Announcement was recently made of the promotion of **George Brown** to the post of parts and service manager of Renault, Inc., in charge of all parts and service operations in the United States. In this capacity, he will supervise Renault's national network of field service personnel and parts depots. . . . Also, **Arnold Smith** has been made director of Quality Assurance with the Lockheed Electronics Company in Plainfield, N. J., a subsidiary of Lockheed Aircraft.

I hope you all have a very pleasant summer vacationing at the beach or in the country, and please continue to keep the school informed of news items appropriate for future issues of The Review.—**Richard H. Harris**, 26 South Street, Grafton, Mass.

'49

We have a few more notes which were written by classmates who were present at the Centennial Celebration. . . . **Earl and Anyes Eames, Jr.**, live at 153 North Avenue, Weston, and have one girl and two boys. . . . **Bill and Lois Edgerly** live in Wayland and have one boy and girl. . . . **Harold and Sally McInnes** live in Holden, Mass., and have three boys ("house apes"). . . . **Andy Bigus**, period (to the extent that he is committed). . . . **Audrey and Archie Harris** live in North Reading, Mass., but are moving to Weston shortly. They have one girl and one boy. . . . **Fletcher and Nell Eaton** have one boy, two and three-quarters, and one more due in May, 1961. They reside at 83 Herrick Road, Newton Center, Mass. . . . **Russ and Sally Cox** of 103 Loring Road, Weston, Mass. . . . **George and Peg McQueen** live in Framingham with a boy, 10, and a girl, eight. He works for Polaroid. . . . **Kemon Taschioglou** is now serving as a market research consultant for Philbrick Research and is to be married on May 27 to Rhoda J. Kyser and lives at 60 Parkman Street, Brookline. . . . Mr. and Mrs. **John Marvin** of 34½ Beacon Street,

Boston. . . . Mr. and Mrs. **Robert Talambiras** of 248 Central Street, Auburndale 66, Mass. . . . **Ed and Peg Kerwin** of 3 Legion Road, Weston, Mass. . . . **Bill and Louise Streat** of 1009 Ross Avenue, Greensboro, N. C. . . . **Al and Ruth DiMascio** of 88 School Street, Waretown, Mass. . . . **Ed Somma** of Middleburg, Conn. . . . **Art and Joan Kirby** of 715 Cinnaminson Avenue, Palmyra, N.J. They were married in December, 1960, and he is working for E. I. du Pont. . . . **Paul and Frances Tausche** of 70 Spring Lane, West Hartford, Conn. They have one daughter, four, and one son, three. He is with G.E. in Plainville, Conn. . . . Also, **Frank and Sonya Huls-wit**.—**Frank T. Huls-wit**, Secretary, 14 Nadine Road, Saxonville, Mass.

'50

Alas! The end of The Technology Review year is here and we're all getting older, wiser, and richer? First, I want to tell you that I'll be looking forward to hearing from you during the summer even though the next Review issue will not be out until November. As a matter of fact, how about lunch at 12:30 at the M.I.T. Club of New York in the Biltmore on the first Monday of each month? The Class of '50 evidently isn't the drinking-eating-drinking class we all thought it was. They tell me we're never on hand for the Class of '50 luncheons each first Monday. So hold your thirst and let's get together once a month and talk over the "happy old days." Meanwhile, some news. . . . **Bob Mann** tells me that the Centennial was great, particularly due to the following '50'ers who were on hand for the festivities: **Jay M. Bedrick**, Mr. and Mrs. **Roger B. Bond**, **W. Paul Jensen**, **Robert W. Mann**, Mr. and Mrs. **Edward F. Martin**, Mr. and Mrs. **Ephraim M. Miller**, Mr. and Mrs. **Gerald G. Fisch**, Mr. and Mrs. **David W. Marcus**, Mr. and Mrs. **Searle B. Rees**, Mr. and Mrs. **Jacob Shapiro**, Mr. and Mrs. **Morris L. Waters**, Mr. and Mrs. **John T. Weaver**, Mr. and Mrs. **Thomas E. Wetmore**, Mr. and Mrs. **William Schmitz**.

Jay Bedrick has recently changed jobs from chief engineer of Integron Corporation to Minneapolis-Honeywell in Boston. . . . **Ephraim Miller** is a technical editor with Foxboro Instrument Company, Foxboro, Mass. . . . **Gerry and Mrs. Fisch** are proud parents of a daughter, **Susan Eleanor**, born November 10, 1960. Mrs. Fisch (nee **Jean White**, B.A. '54) is practicing in her field, doing some interior architectural design. Gerry works out of Montreal as director of Payne Ross Ltd., a Canadian managerial firm associated with Bruce Payne Associates of Connecticut, of which Jerry is a vice-president. . . . **Dave Marcus** is in the process of establishing himself in the automated food dispensing business, catering to industrial clients on the Route 128 circle. . . . **Bill Schmitz**, Sc.D. candidate in 1950, is with Du Pont in Niagara Falls where he heads up a polymer research group. . . . **Ed Martin** is in Wilmington, Del., with the Wilming-

ton Trust Company. . . . **Jay Ballinger**, Course XVI, was in the other day from California, where he is assistant manager of Industrial Systems of Ford Aeronautics in Newport Beach, to discuss the field of computer-aided design. . . . **William R. Bidermann** has been appointed to the newly created position of chief production engineer of Telecomputing Corporation's Whittaker Gyro Division in Van Nuys, Calif. Under Bidermann's supervision, a product engineering section is being established to extend Whittaker Gyro's efficiency and quality control from the design state through all phases of production on gyroscopes, accelerometers and guidance systems. Among the missile programs on which the company is participating are Bullup, Shillelagh, Polaris, Nike Hercules, Skybolt, and Nike Zeus. Prior to joining Whittaker Gyro, Bidermann was assistant general manager of Kearfott Company's microwave division in Van Nuys.

Norman B. Champ, Jr., was elected vice-president of the Crane Company and will supervise the operations of the Chapman Valve Manufacturing Company of Indian Orchard. Norm will also be in charge of the operations of the Midwest Piping Division of St. Louis, Mo., Swartwout Division of Hooksett, N. H., and the Cochrane Division of Philadelphia, Pa., with headquarters in New York City. The announcement of Norm's new position closely follows Crane Company's acquisition of Midwest Piping Company, Inc., where he was vice-president and a director. Previous to his executive responsibilities at Midwest, Norm had extensive experience in Midwest's shop and office, including posts as shop foreman, and work in billing, estimating, and materials control. A native of St. Louis, he received his S.B. in mechanical engineering from M.I.T. and his M.B.A. from Harvard University. . . . After graduation **Frank W. Conlin, Jr.**, went with Johnson Service Company, manufacturers of automatic temperature and air conditioning controls, as sales engineer, working in New York, Washington and Union, N.J. He took up skiing in 1956, and in 1957 married **Barbara Rowe**, a Darien, Conn., girl (also a skier). He now has two girls, **Kathleen** and **Anne**, and lives in Summit, N. J. In 1959 he joined Washington Engineering, an industrial piping contractor, as vice-president, and after a year joined **Clark, Dolge and Company, Inc.**, investment bankers, as a security analyst. He is presently in sales, specializing in investments for both individuals and pension funds. Fortunately, Wall Street doesn't require any knowledge of differential equations! . . . **Jack Stewart** has been with the J. C. Penney Company since graduation and is now a buyer in their New York headquarters. Jack married **Jean Donahue** of Newark and they have four children, **John**, **Michael**, **Shelley** and **Richard**. The **Stewarts** live in New Brunswick, N.J. . . . **Dick Dobroth** is now an architect and designer of homes in Deerfield, Ill., north of Chicago. He and his wife, **Peggy**, of Forest Hills, N. Y., have five children, **Kevin**, **Brendan**, **Wegan**, **Mark** and another little Irishman whose name escapes me at the mo-

ment. . . . **Lee Layton** has been with DuPont since graduation as chemical engineer in Gibbstown, N.J., and now, after setting up a pilot plant operation in Texas, has transferred to the Lone Star State. He and his wife, **Josie**, have three girls, **Joanne**, **Donna** and **Marcia**. . . . **Don Miller**, as you know, is with Cresap, Paget, and McCormick in New York and I have the pleasure of "missing" the early train with him in the mornings "occasionally." Don took my wife, **Joy**, and me out to dinner recently and I can see that he knows his way around the high spots of Huntington Village. You should see him do the shuffle; or is it the shake? Well, so long, see you soon, I hope.—**Gabe Stilian**, Secretary, American Management Association, 1515 Broadway, New York, N.Y.

'53

It may seem like planning for the far-away future, but the time has come to begin thinking about organization for our 10th (. . . good grief! Already?) Class Reunion. Am issuing a call for help from all of you who might be interested in working on some aspect of this gala affair. (We aren't asking for money yet; that comes later!) The planning, work and hair-pulling required in getting the reunion off the ground and in making it a success is, in short, tremendous. So if you are willing and able, lend a hand.

Ole Faithful **Jeff Davis** paid his annual visit while interviewing prospective "bodies" for his firm, Dewey and Almy. He's now research manager of one of the labs at Dewey and Almy, and enjoying all phases of his work immensely. He is still living in Norwood with his wife and two youngsters, ages one and three. Also he reports that **Bob Robertson** is still with Eastern Airlines, and **Jonas Kjellberg** is national sales manager for Saab. . . . **Lawrence Lewin** was the recent co-author of a paper presented at the 45th Annual Meeting of the Federation of American Societies for Experimental Biology. The title was: "Thiamine biosynthesis: Mechanism of formation of 2-methyl-4-amino-5 (hydroxymethyl) pyrimidine pyrophosphate." (P.S. That was quite a paper; but please explain by return mail.)

Other class doings of note. . . . **Ted Brown**, who is assistant professor of art history at the University of Louisville, recently prepared (to quote the papers) "an outstanding booklet on historical buildings of that city (Louisville, Ky.) which has drawn praise of leading daily newspapers." . . . A recent article noted that **Myles Towne** is now manager for the Bradford Golf Club. Apparently the construction and layout of the course was planned by Myles and his father some years ago. . . . **Everett Hobart** was a speaker at the first Worcester Diocesan Catechetical Congress which was held at Holy Cross College this April. Otherwise, he is supervisor of analytical chemistry at Connecticut Aircraft Nuclear Engine Laboratory, Pratt and Whitney Aircraft. . . . **Alan Lazarus** recently was promoted to assistant professor in the Physics Department here at M.I.T. . . .

Have a good summer. Do write if you get a chance.—**Martin Wohl**, Secretary, Room 1-131, M.I.T. Cambridge 39, Mass.

'54

Now that graduations, alumni days, and such like have come and gone, we are ready to close out another year of class news. This past year, I believe, has been the first in which I have managed to get a report in every issue of *The Review*. And if you people will keep me informed on your comings and goings, I can hopefully look for similar records in the future. . . . On to the news. Several birth announcements have found their way to Arlington. **Ron** and **Sally McKay** announce the arrival, on March 10, of young Andrew Gordon, who is delighting mama and papa at their homestead in the Boston area. . . . **Dave** and **Connie Wones** send word that son Andrew Gilman appeared on March 20. The Wones' live just down the road apiece here in Arlington. It is noteworthy that Andrew G. seems to be the name to bestow during March; I wonder if the reason is really astrological. . . . A message arrived the other day with the intelligence that **Mel Mattson** has been promoted to captain. Mel is with the Army at Wackernheim, Germany. . . . **Pete Sherman** has left the Shipbuilding Division of Bethlehem Steel at Quincy, Mass., and is now working for Avco in Wilmington, Mass. No reason was given. . . . **Shushan Teager**, who spends most of her time writing computer programs for her husband's consulting service, has recently returned from a jaunt to Lebanon, and is again happily programming away.

The final report on the 1961 Alumni Fund shows that 302 members of the class (27 per cent of the active Class Roll) contributed a total of \$4103 this year, making the average contribution about \$13.60. This is an improvement over last year, when 24 per cent of the class sent an average of \$11.40 per contributor. For purposes of comparison with the rest of the Alumni this year, we note that 30 per cent of the total active Alumni Roll gave an average of \$43.50 per contributor. Ours being a still relatively young class, it would perhaps be more appropriate to compare ourselves with the classes of 1951-1960, inclusive. For the latter group, we find that 25 per cent contributed to the Fund, the contributions averaging \$14.00.

George Schwenk was in town for a week during May. He is a computer man for the Army at Fort Devens, Mass., and had to come down to see what we at headquarters were doing. George says that he is losing track of the Jolly Boys, although he does see **Russ Barnes** and **Stan Hoff** occasionally when he goes into Boston for dinner. He managed to track **Don Mott** to an obscure town in outer Massachusetts last December, but has lost him again. George himself is still hale and hearty and very much in evidence, however. . . . Here on the home front, I have finally acquired my Ph.D. in mathematics from St. Louis University. I

leave the Army at the end of next month, and Marcia, Eddie and I will immediately depart for St. Louis, where I shall assume the duties of assistant professor of mathematics at St. Louis University. So, come November, I shall once again be reporting from the good old Midwest.—**Edwin G. Eigel, Jr.**, Secretary, 321 North Thomas Street, Arlington 3, Va.

'55

The M.I.T. Centennial Celebration provided an opportunity for a number of us to get together in honor of the old Institute. Aside from the programmed festivities which I am sure most of you are familiar with after that deluge of mailings from the committee, there was a cocktail party before the banquet at which '55 was well represented with the **Fred Brookses** and **Dave Wilbourn** coming up from Connecticut and New York respectively to augment the local crowd. Fred is with Dunlap Associates in Stamford, and will have been transferred to their Washington, D. C., office by the time you read this. Dave is in the chemical manufacturing business in eastern New York state. The **Jim Eackers**, the **Len Whartons**, and **Dennis Shapiro** provided class officer representation. Jim is executive secretary of the M.I.T. Educational Council, Len is a junior fellow at Harvard, and Dennis is with Aerospace Research, Inc., in Cambridge. The rest of the table was filled in by the **Jack Browns**, **Mel Barkan**, **Marilyn Fraser**, **Phil Meyfarth**, and **Sandy Goldman**. Jack is a project engineer at Digital Equipment Company. Mel is a vice-president at Beacon Construction Company in Boston. Marilyn has been teaching architecture as an instructor at M.I.T. (Rumor has it that she is doing some work on her own out of a Wellesley office.) Phil is a research assistant in Mechanical Engineering at Tech, and Sandy is an instructor at Columbia. Other '55'ers seen during the weekend were Jim Storey, Bernie Wuensch, Jerry Zindler, Fred Morgenthaler, Jerry Kliman, and Ron Howard (who was in the academic procession as a Course VI professor.)

Bob Craven was not at the Centennial for a good reason. He was busy being engaged to Anita Racioppi of Bridgeport, Conn. She is a graduate of Wellesley College, and is administrative assistant to the Chief Physician at Children's Hospital in Boston. Bob and Anita will be married on June 17 and plan to reside in Watertown. Bob is head of the Instrumentation Section at Aerospace Research, Inc., in Cambridge. . . . Information for the Class Notes has been unusually scarce this year, but rather than sermonize here, I'll step aside at the end of the column for some choice words from your newsless Wilmington correspondent. Your Cambridge secretary has been a bit more fortunate in having centennials at his back door, and being able to travel about on business and concurrently check up on you provincials. Hardly a provincial though, is **Marc Gross** whom I happened to meet at LaGuardia on the way to Washington. Marc is a patent attorney

with Sweedler and Zucker in New York City and the proud papa of a baby girl. He and Devra live in White Plains, and this trip was one of his regular visits to the Patent Office. . . . Another proud set of parents of a baby girl are **Dick** and **Judy Bergman** of Princeton, N. J.

I recently had an opportunity to visit the National Bureau of Standards at Boulder, Colo., and at the same time saw **Dave** and **Toby Brooks**. Dave is finishing his doctoral program in economics at Colorado University and expects to join a new non-profit organization, Resources for the Future, in Washington this fall. He minored in geology and hopes to get into the political aspects of mineral resources. Toby's hospitality was first rate, and before I had a chance to say boo, she had a picnic all arranged. Two little bundles of fun, Jake and Naomi, provided plenty of entertainment, and it was all most enjoyable. . . . From Boulder, I visited the Air Force Special Weapons Center at Kirtland A.F.B., Albuquerque, N. M., where I found First Lieutenant **Tom Stockham** finishing out his two-year hitch. He is on leave of absence from the M.I.T. Electrical Engineering Faculty (assistant professor), and will resume activities at Tech in September. We had many happy hours at the "O Club" talking over old times. Besides doing his normal work in connection with computer operations, Tom has found time to take up private flying with the Kirtland Flying Club. His eyes really light up when he talks of loops, spins, chandelees, snap rolls, etc., and his many hours of cross-country flying all over the West. . . . This just about empties the files for this season. We will close with a message from Dell:

Writing this last column until fall comes as more of a relief than usual. Normally the idea of a break in the routine, a sort of vacation is pleasant, with the thought of a full mail bag in the fall. This year in addition there will be the added pleasure of the absence for three months of guilty feelings that come when Class Notes are due and there is nothing to write about. Not that your columnists should feel guilty (we can only scavenge; we can't create), but that forbidding gap where the 1955 notes should appear always makes us feel uncomfortable. This year we seem to have hit an all-time low in material, perhaps a post-reunion fit of depression! More likely it's the fact that many of our classmates are approaching "steady state" of a type. Most have been in and out of military service or graduate schools and have been quite mobile as the fat envelopes of change-of-address slips which arrive with frightening regularity indicate. (Some of our compatriots have moved six times in the last couple of years!) But since the flood of address changes that came last fall with the preparation of the 1960 Alumni Register, the number of moves has diminished and the addresses are beginning to have a more permanent look about them. This apparent settling down has also meant a drop in the number of clippings that we get via M.I.T. from newspapers, schools, industries, and professional societies about engagements, marriages, gradua-

tions, scholastic honors, new jobs, promotions, papers presented in meetings, and the like. So more than ever we are dependent upon you personally to let us know what is going on. Your Cambridge correspondent seems to have had much better luck this year in unearthing news than your Wilmington correspondent. There are still a lot of classmates in the Boston area, and communication personally or by telephone definitely has letter-writing beat; but those of you who don't live near one of us just must get busy and wield the pen! We don't expect a wealth of material from each of you. (Though we sometimes get it.) Some of the newsletters which we receive are terrific, as are some letters just crammed with information about classmates living nearby, ex-roommates, fraternity brothers, etc. For these we are eternally grateful. But it would be wonderful to get just a postcard occasionally with a few notes on your present station in life. Many of you have interesting positions here and abroad, many are in the academic world, several have joined religious orders. But we hesitate to attempt to say something interesting about these situations in which all the information available is a new address. Speculation can be dangerous! So have a good summer, enjoy your vacations, and drop us a postcard from Cape Cod, the Grand Canyon, or from home!—**Mrs. J. H. Venarde**, 107 Mullin Road, Wilmington 3, Del.; **L. Dennis Shapiro**, 15 Linnaean Street, Cambridge 38, Mass., ELiot 4-4901; Co-secretaries.

'56

Current returns on the questionnaire number over 160 and registration for the reunion is about 80. More definite data will be in the November issue.

Herb Amster has recently returned to the Boston area to work for Raytheon in a new cost analysis group. . . . **Mickey Reiss** has left Tech also to work for Raytheon. . . . **Bill Barrett** is now a research engineer in light construction with Weyerhaeuser in Seattle. He was with Douglas Aircraft in California. Bill is one of our Northwest group in contact with **John** and **Win Coleman**. The Colemans have just spent two months in Europe but expect to make it to the reunion. . . . I recently received a note from **Dave Braslau's** mother enclosing dues. Dave has been an exchange student at Moscow University for the past year and cannot make it to the reunion. He will return by fall to continue his doctoral studies at the University of California at Berkeley. . . . **George** and **Marilyn Cain** announced the birth of a daughter, Carolyn, in February. George is working on his doctorate in math at Georgia Tech and teaching there. . . . **Mort Cohan** is working on his doctorate in nuclear engineering at Tech. Afterwards he will return to active duty in the army. . . . **Steve Freedman** is receiving his Sc.D. from Tech this June. The Freedmans have a son, Ralph. . . . **Walt Frey** is an aeronautical engineer with Pan American World Airways. Walt has

been vice-chairman of the regional solicitation program of the Hicksville-Levittown region.

Matthew Barrett is with Allis Chalmers in Washington, D.C. . . . **Warren Briggs** has announced his engagement to Renata Hofman, formerly of Wiesbaden, Germany. . . . **Paul Hoffman** is with the Carborundum Company in Niagara Falls. . . . **Jorma Lampen** is with UNICEF in New York. . . . **Max Plager** has received an M.S. from both Stevens Tech and the University of Chicago and is now working on his Ph.D. from Chicago. . . . **Donald Rinald** is with Westinghouse Atomic Power Department in Pittsburgh. . . . **Earle Ryba** received his doctorate from Iowa State in '60 and is now an assistant professor of metallurgy at Penn State. . . . **Phil Spertus** is working with his father in Metalcraft Corporation in Chicago.

Feature for the month is **Mal Blotner**. Mal is a chemical engineer with E. R. Squibb and Sons, studying for his M.B.A. at Rutgers in the evening, and manager-owner of an espresso shop, Cafe Europa, in New Brunswick. An excellent writeup in the local paper describes the relaxed non-beatnik atmosphere Mal has achieved in his establishment. Adding to the European motif is an imported Italian for dispensing the exotic brews. . . . In closing I must not forget that nine members of the reunion committee held a meeting at the Faculty Club one evening at the end of March to finalize the general program and theme of the reunion. The November issue will describe more fully the fruits of their year's labor.—**Bruce B. Bredehoff**, Secretary, 1094 Center Street, Newton Center 59, Mass.; **M. Philip Bryden**, Assistant Secretary, Apt. 207, 3512 Durocher Street, Montreal 18, P.Q., Canada.

'57

The Centennial Celebration at Tech proved to be a fine occasion for renewing old acquaintances. **Fred Morefield** was there but had to cut his visit short for a business trip to Rome, Kuwait and India. . . . **Graham Lusk** is at Tech getting his Ph.D. in the Department of Nutrition, Food Science and Technology. . . . **Art Bergles** is getting his Ph.D. in Course II. . . . **Alan Budreau** is getting his Ph.D. in biophysics at Harvard. . . . **Roy Norris** is working at the Smithsonian Astrophysical Observatory in Cambridge. . . . **Bill Salmon** has joined the New Frontier in Washington as assistant to the Scientific Advisor to the Secretary of State. . . . **Alan Kotliar** has moved to Milwaukee where he is assistant to the president at Basic Products Corporation. . . . **Ron** and **Pat Keefe** were married in 1957 and have two sons, ages two and one-half and one and one-half. Ron is assistant to the Vice-president in charge of operations at Epsco, Inc. Ron is attending Boston College Law School in the evenings.

Dick Sanderson is at Syracuse getting his Ph.D. and doing research on infrared spectroscopy. . . . **Marshall Schactman**

is a systems engineer with Bell Telephone Labs at Murray Hill. . . . **Bernie Levy** got his M.D. from Duke in three and one-half years and is now interning at Duke. . . . **Mal Jones** is an Air Force first lieutenant doing systems design work for the NSA. . . . **Ben Chertok** is back from Ghana where he participated in Operation Crossroads Africa, a forerunner of the Peace Corps. Ben is engaged to Barbara Liss. Ben is getting his Ph.D. at B.U. and is teaching Physics at M.I.T. and B.U. . . . **Martha Goodway** was at the Centennial. . . . **Mike Schneider** is getting his Ph.D. in Electrical Engineering at Harvard with an emphasis on computer design. . . . **Ralph Brown**, having received his Ph.D. in Chemical Engineering from Michigan, is now at Scott Paper in Philadelphia doing pulping research. Ralph teaches thermodynamics in the evenings at the Pennsylvania Military College. Ralph presented a paper entitled "Sprays Formed by Flashing Liquid Jets" at the national meeting of the A.I.Ch.E. in New Orleans last February.

Mike Brenner is getting his Ph.D. at Johns Hopkins. . . . **Brooke Anderson** is a materials engineer with Sandia Corporation at Albuquerque. Brooke is married and has three kids, ages one and one-half to four and one-half. . . . **Don Arnush** is getting his Ph.D. in Course VIII at Tech this June. Don has a postgraduate NSF Fellowship to study at the Max Planck Institute. . . . **Don Park** is getting his M.S. in Course XV at Tech. . . . **Butch Dickerson** completed his M.A. program at Harvard and is now an assistant director of Admissions at M.I.T. . . . **Bill Doughty** is with Artisan Metal Products in Waltham. . . . **Hank Dieselman** and **Dave Lightbody** are getting their Ph.D.'s in solid state physics at Tech. . . . **Tom Boyle** is getting his Ph.D. in Course X at M.I.T.

Jeffrey Wisnia writes: "I received an M.S. in Electrical Engineering in the spring of 1958 from the University of Pennsylvania. Since that time I've been working for Comstock and Wescott in Cambridge doing design work on satellite-borne scientific packages. I've been spending most of the past three summers on field trips to White Sands and Cape Canaveral. I'm engaged to marry Madelyn Bell. While I'm in Boston during the summers, I like to chase lobsters at Gloucester and Rockport, and would appreciate hearing from other classmates of a similar ilk." For you fellow frogmen, Jeff's address is 91 Chestnut Street, Brookline. . . . **Robert Watts** writes that his second daughter was born in March. Bob is now with Bell Telephone Labs after completing his professional Electrical Engineering degree. . . . Last but not least, we should like to repeat last month's notice about **Gary Dischel**. Gary is in the process of forming our 5th Reunion Committee. All willing to help him out should get in touch with him at 1105 Lexington Street, Building 9, Apartment 1-4, Waltham 54, Mass. His business phone is KEnmore 6-2770, Extension 356.—**Alan M. May**, Secretary, 525 East 81st Street, New York 28, N.Y.; **Martin R. Forsberg**, Assistant Secretary, 11 Scottsfield Road, Allston 34, Mass.

This is the last issue for the summer. By the time the issue reaches you, we hope to have a class poll ready for your perusal. Sometime during the summer you will probably receive the questionnaires, which I hope can be completed and returned immediately. If anyone has any especial data that he would like us to include, we're open to suggestions. . . . **Toni Deutsch Schuman, Ken Auer** and **Bill Daly** have accepted the posts of Western, Midwestern and Eastern associate secretary respectively. Starting in the fall they will be on stream in this column. If you are in their geographical areas, please contact them. Toni presently is working for Packard Bell, complete with her own secretary, and is doing so well that she and her husband are moving to "young executivesville" in the San Fernando Valley. . . . Was very pleased to receive a letter from **Harry Weintrob** who is working three-quarters of the time at System Development Corporation in Santa Monica while finishing up an M.B.A. in operations analysis at U.C.L.A. Although California appeals to Harry and his wife, the former Joan Forum, the New England area still beckons them. Harry's closing remark was, "Thoughts of a Ph.D. are also beginning to spin around in my head."

Charlie Smith has one of the most unusual jobs I've heard of. He's in the ceremonial honor guard of the burial detail at Arlington National Cemetery. He puts away an average of 10 per day. Can anybody top that? . . . Also in the line of unusual jobs is **Pete Hellsten**, a test pilot for Grumman's new hydrofoil boat. It isn't an unnatural job for Pete because he has spent many years racing hydroplanes, a sport for young bachelor playboys (Pete still numbers in this rank). . . . **Bart Sensenig, 3d**, has been teaching at Harvard this past year but is leaving this summer for India and a post in the foreign service. . . . **Angela La Vigne** was awarded one of four Amelia Earhart Scholarships for graduate study in aeronautical engineering by Zonta International at its convention in Toronto, Ontario, last June. This is a \$2500 award given in international competition. Congratulations Angela! . . . **Al Philippe** will receive his M.S. degree in Civil Engineering at the Institute's June Commencement. In addition to a degree to show for two years of hard work, Al also has a delightful daughter called Pamela. Al plans to combine this background with mechanical engineering in his new job which will be with a metalworking company in Aberdeen, Md. . . . I ran across **Frank Bielsik** last week at the M.I.T. Boat House. He's still in the Air Force and has quite a job. The previous four weekends have seen Frank in Florida, Canada, Boston and Washington, no doubt with a girl in every port. Frank and I spent Saturday in an M.I.T. launch watching some very exciting crew races. If you haven't noticed, Tech has progressed in all sports and is certainly having a good year.

Just received an Army release about Second Lieutenant **Robert J. Hecht**, newly commissioned as a Signal Corps officer. Since graduation Bob has led a busy existence, receiving a commission from Uncle Sam, a master's degree from California Institute of Technology, and an engineering position at I.B.M. . . . Had a difficult time translating a French wedding announcement but, with the aid of a French-English dictionary, I can pass on to you the news that **Michel Morel** and **Dominique Vercouter** were married April 26 in Paris.

We have some news of the graduate members of '58. . . . The honorary degree of Knight of St. Patrick, summa cum laude, was conferred upon **Melford E. Monsees** by the Engineers Club at the University of Missouri. Monsees received this degree for his work in the furtherance of the engineering profession in Missouri. Monsees is chief of the Engineering Service Branch, U.S. Army Corps of Engineers, in Kansas City, and has been active in recruitment and development of young men in the engineering profession. He is also president of the Missouri Society of Professional Engineers, Western Chapter, and is chairman of the Club Presidents' Round Table of Kansas City.—**Cornelius Peterson**, Secretary, 301 Allston Street, Brookline 46, Mass.; **Antonia D. Schuman**, Western Associate, Packard Bell Computer Company, 1905 Armacost Avenue, Los Angeles 25, Calif.; **Kenneth J. Auer**, Midwestern Associate, 760 Mistletoe Road, Akron 7, Ohio; **William G. Daly, Jr.**, Eastern Associate, 125 White Street, Waverley 79, Mass.

'60

This article marks the end of one year of reporting the activities of this class. For your secretary, it has been a busy and interesting 12 months. I hope the rest of you can say the same. I happened to be in Boston in early May and ran into several members of '60, namely **Harry Clark, Hank Piehler, Bruce Nelson**, and **Carl Swanson**, among others. Hank will be working for the Rand Corporation again this summer. . . . Here are a few marriages that I have recently found out about. **Howard Braun** and **Elaine Sallet** were married in February and are now living in Cleveland. . . . **Blake Foster** and **Sarah Bubb** were also married in February. They are reported to be living in Alexandria, Va. . . . Two marriages took place in January: **Sherman Karp** and **Joan Kruger**; and **Joseph Pedlosky** and **Carin Rossby**. The Karpes are living in Cambridge, Mass., and the Pedloskys in Allston, Mass.

Steve Scheinberg has been named a junior fellow of Harvard's Society of Fellows. He will be at Harvard for the next three years working in mathematics. Steve spent this last year doing graduate work at Princeton. Congratulations Steve! We'll be looking for a Nobel prize in a few years. . . . **Henry Hudgins** is working for Uncle Sam at Fort Eustis, Va., as a mechanical engineer for the U.S.

Army Transportation Research Command. Henry was working for North American Aviation in Los Angeles before joining the Army. . . . **Basil Bonk** joined the development engineering staff of General Radio Company the first of this year. The company is located in West Concord, Mass. . . . That's the news until the next issue which will be coming to you in November. Good luck to all of you. Remember your contributions to the Second Century Fund.—**John B. Stevenson**, Secretary, 747 Carnegie Avenue, Apt. C-11, Akron 14, Ohio.

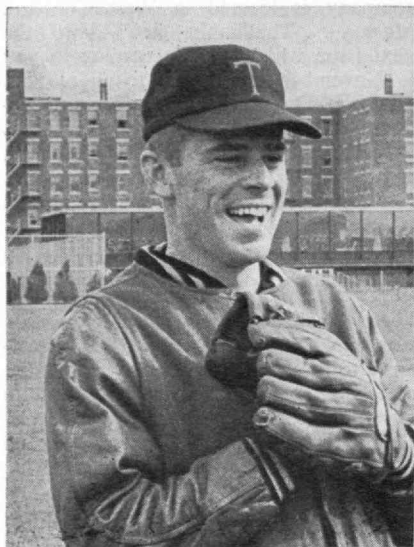
'61

As this issue of The Technology Review makes its appearance, 1961 is scattered to the four winds. After being completely assembled as a class only twice in our four years (Freshman Weekend and Graduation Day), we will probably spend the rest of our lives sporadically trying to get together again. Reunions, and everything else, will be immensely facilitated if you give us (class officers and Alumni Office) your correct address. Please attend to this if you have not already; there is a form available for the purpose. A copy was sent to you last spring. If you haven't filed one, drop a postcard to me, or the Alumni Office (1-290), and we'll get it straightened away. Once we have good addresses for everybody, we'll be in a position to help members of the class who have temporarily "lost" friends, or who want to meet other M.I.T. men in their area, or who are interested in arranging area get-togethers of one sort or another. The officers and Executive Committee feel it important that such assistance be available. We will do our best to provide it, but our effectiveness will be limited if our address rolls are incomplete.

If we can be of any assistance along these same lines over the summer, we would be happy to help. The officers, and their summer addresses, are as follows: President, **Ira Jaffe**, 15210 James, Oak Park 37, Mich.; Vice-president, **Pete Gray**, 1121 Isabella Avenue, Coronado 18, Calif.; Secretary, **Joe Harrington**, and Treasurer, **Jerry Grossman**, General Delivery, Europe. The Class of '61's Executive Committee is as follows: **Marla Moody**, **Al Brennecke**, **Dorsey Dunn**, **Gary Gustafson**, **Tom Hastings**, and **Hank Schleinitz**. As we went to press, the only addresses available from members of this group were Hank's and Al's. It's 3459 Alberta Street, St. Louis 18, Mo., for **Brennecke**, and 23 West Oxford Street, Duluth, Minn., for **Schleinitz**.

A final word. Every member of the class receives this issue of The Review free. The magazine is sent regularly to those who contribute to the Alumni Fund. The officers and Executive Committee hope that as many members of the class as possibly can will get The Review, as it is the best way we have to keep in contact with you, and keep you posted on what's going on.—**Joseph Harrington, 3d**, Secretary, 1 Cherry Street, Wenham, Mass.

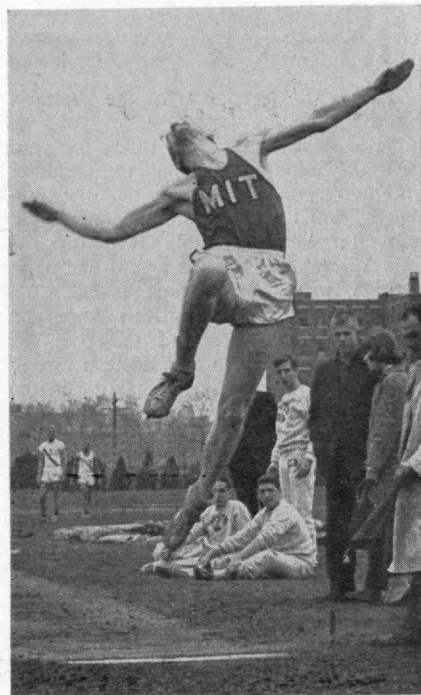
This Spring's Stars



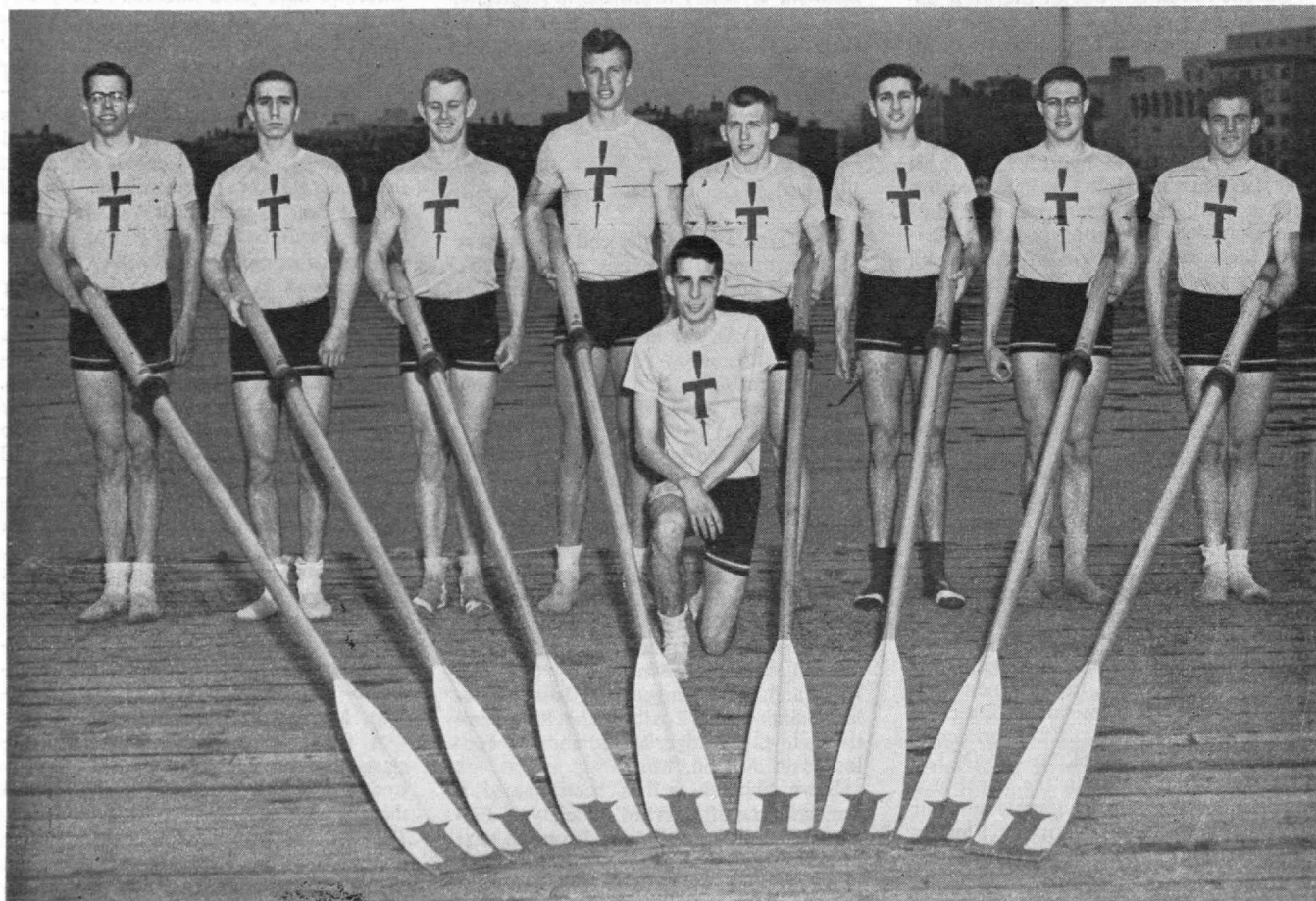
PAUL EHRENBURG, '61, was a Greater Boston College "All-Star," on second base for the varsity team that finished the season with an 8-7 mark, the best in many years.



JOSEPH SKENDERIAN, '61, midfielder, set a new all-time lacrosse record at M.I.T. with 35 goals, and was the nation's leading scorer this year from a midfield position.



DON MORRISON, '61, track co-captain, shown on the way to one of his broad jumps, was consistently over the 21-foot mark and made a 22-foot, 5-inch leap in the New England meet.



THE VARSITY HEAVYWEIGHT CREW included (left to right) Michael Lawton, '62, Richard Millman, '62, Captain Chester Riley, '62, David Marks, '62, Michael

Gockel, '61, Anthony Fiory, '63, Ronald Cheek, '63, and Christopher Miller, '63. In front is George Dotson, '62, coxswain. Their record raised high hopes for next year.

